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USSR Report

NATIONAL ECONOMY

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PLANNING, PLAN IMPLEMENTATION

SPECIAL SIGNIFICANCE OF 1987 PLAN UNDERSCORED

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 12, Dec 86 pp 3--8

[Article under the rubric "The Implementation of the 27th CPSU Congress' Decisions": "Special Features of the Plan for the 2d Year of the 5--Year Plan]

[Text] At the 6th session of the USSR Supreme Soviet's 11th convocation, which took place from 17 to 19 November, 1986, the Law on the State Plan for the Economic and Social Development of the USSR for 1987 was adopted. The plan's tasks provide for the implementation of the decisions of the 27th CPSU Congress and of the April (1985) and June (1986) CPSU Central Committee Plenums on the acceleration of the country's social and economic development. The most important indices outlined for 1987 correspond to the 5-year plan's goals and are helping the economy reach the average annual growth rates laid out in the plan.

The country's economy in the 2d year of the 5-year plan will be characterized by a whole series of special features. First and foremost is the widespread dissemination of new management methods. In 1987 industrial, agroindustrial complex, transportation, communications and domestic services enterprises will be operating in accordance with the new methods.

The decision of the managing bodies on the conversion as a whole of the ministries of chemical and petroleum machine building, of the automotive industry, of the petroleum refining and petrochemical industry, of instrument making, automation equipment and control systems, of the maritime fleet, and 36 large enterprises and associations of 17 other industrial ministries to the conditions of complete self-support, self-repayment and self-financing in accordance with the principle of the AvtoVAZ [production association based on the Volga passenger vehicle motor vehicle plants] and the Sumy Machine Building Association imeni M. V. Frunze was adopted. At the present time widespread preparations are going on for this transition.

Beginning with the coming year, the area of material and technical supply will be expanded by means of wholesale trade. The enterprises, scientific research and planning and design organizations of the Ministry of Construction, Road and Communal Machine Building are converting to this method of supply. Customers will be able to obtain the necessary resources without funds or limits, which will increase operational efficiency in satisfying demand.

There are more opportunities to establish optimum reserves and to conserve them.

In the plan, measures are provided which ensure the realization of the resolutions adopted by the CPSU Central Committee and the USSR Council of Ministers on the matter of the further improvement in the administration of the country's construction complex and the economic mechanism in construction. These resolutions are aimed at a basic improvement of the investment process and at the strengthening and development of the industry. The rights and independence of the construction and installation organizations will be expanded, a gradual transition will be implemented to contract prices agreed upon between the customers and the contractors for the construction of buildings, the role of contract agreements will rise, as well as the mutual economic responsibility of all the construction participants in the achievement of the work's final results. At the same time, a step-by-step conversion of the construction and installation trusts and organizations equivalent to them, of the main territorial and specialized construction administrations and the union republics' ministries of construction to comlete self-support and self-financing. The putting into practice of all these decisions opens up a broad area for labor initiative and creativity aimed at the search for and the realization of internal reserves for increasing the efficiency of construction.

The balance between all the sections of the plan has been improved by improving the balance study in the process of formulating their basic indices.

In conformity with the resolutions of the CPSU Central Committee and the USSR Council of Ministers of 12 July, 1985, "On the widespread dissemination of new management methods and the intensification of their effect on the acceleration of scientific and technical progress," the USSR Gosplan brought in August of 1986 to the ministries and departments of the USSR and the union republics' councils of ministers the goals for the production of output in physical terms, and by 1 September, 1986, the funds for the material and technical resources for a broad list of products. This is necessary for the timely preparation of production for the output of the products necessary for the national economy, the new, highly efficient articles, and also for the conclusion of the economic agreements by the associations (enterprises).

Broad possibilities for more complete combining of territorial and sector administration methods have been opened up by the resolution of the CPSU Central Committee, the Presidium of the USSR Supreme Soviet and the USSR Council of Ministers adopted in July of 1986 "On measures for the further raising of the role of and the reinforcement of the responsibility of the soviets of people's deputies for the acceleration of social and economic development in light of the decisions of the 27th CPSU Congress." In conformity with these documents, the role of the soviets in the ensuring of the complex development of the economy and the social and cultural spheres of the region, the acceleration of the growth rates of and the raising of production efficiency, the increasing on this basis of the contribution of the republics, krays, oblasts, cities, regions and villages to the strengthening of the country's united economic complex, is being reinforced. The soviets now have

more rights in solving such questions as the development of the output of consumer goods, services, intersectorial production, capital construction, conservation activities, and social and production infrastructures.

During the elaboration of the plan for 1987, the approach to planning from what has been achieved has been completely overcome. The plan goals of 1986 have been adopted as the starting base, and not the expected fulfillment, as was done previously. This makes it possible for successfully working collectives to bring to light and put to use all reserves in the process of fulfilling the plans, and to ensure their overfulfillment without the fear of overestimating the base for succeeding years.

Substantial changes have been made in the composition of the plan indices, which should completely conform to the requirements of the new management mechanism, the expansion of independence and the raising of the responsibility of the associations and enterprises. The overall quantity of these indices has been significantly reduced in comparison to the 1986 plan. Part of the indices previously maintained in the state plan has been transferred to the ministries, departments, union republic councils of ministers and even directly to the associations and enterprises for planning.

Long-term stable standards, closely binding the material stimuli with the final results of the enterprises' economic activities, have been made the foundation of the plan. This is a decisive step in overcoming the "gross" and "cost" approaches to planning. Beginning with 1987, one of the main indices for evaluating the activities of industrial associations and enterprises will be the 100-percent fulfillment of contract obligations. Attention to the rhythmic operation of the economy over the course of the entire year and to increasing the stability of plan goals is being intensified. In connection with this, the USSR Gosplan will establish goals for the ministries and departments of the USSR and the union republic councils of ministers for the volumes of industrial production, divided according to the quarters of the year, and will not tolerate them being underestimated for the first quarters. the responsibility of the administrators of the ministries, departments, associations and enterprises for the equal distribution of the goals within the quarter is being increased.

The course implemented by the CPSU Central Committee for the acceleration of social and economic development and the qualitative reorganizing of all spheres of social life is positively affecting the long-term growth factors, the acceleration of scientific and technical progress, intensification, the improvement of the production structure, the improvement of the investment process, the raising of product quality and the economizing of resources.

Proof of this is the results of the economy's development for 10 months of 1986. The gross national income increased by 4.3 percent and labor productivity in industry by 4.8 percent. The volume of industrial production rose by 5.1 percent, which is higher than the plan's goals and substantially exceeds its increase for the 10 months of the preceeding year. It also creates the possibility for output already in the first year of the 5-year plan at a rate of development of production on the level of the average annual

goals of the 5-year plan. Positive results have been achieved in the country's agroindustrial complex, the plan for the shipment of loads using all forms of transportation has been fulfilled and consequently, the party's social policy is being realized. However, not all of the individual deficiencies have been eliminated yet. The transition of the economy onto the rails of intensification is being accomplished slowly. There is a lack of the proper persistence in overcoming negative tendencies and eliminated bottlenecks in the development of the economy. Many ministries have not ensured the rhythmic operation of associations and enterprises.

In 1987, having consolidated the positive results of the economy's development, it is necessary to improve significantly the work in all sections and all sectors of the economy and spheres of economic activities. The goal of the plan for 1987 is to ensure the steady development of the economy by means of the intensive growth of public production.

For the second year of the 5-year plan, an increase in the gross national product has been planned on the scale of 4.1 percent as against 3.9 percent for the 1986 plan and in industrial production of 4.4 percent as against 4.3 percent.

The development of the economy in 1987 will be based on a much more complete use of intensive factors. The productivity of public labor will increase by 4 percent. In industry it will grow by 4.4 percent, in construction by 3.8 percent and in railroad transportation by 4.6 percent. For all practical purposes, the entire increase in national income and production in the sectors of the material sphere is intended to be obtained through the growth of labor productivity.

In conformity with the principle policy of the CPSU for the large-scale renovation of the basic assets, in the 1987 plan provision has been made for overcoming the negative tendency of the aging of production assets. In industry nearly a third of the more physically worn-out and obsolete basic assets will be replaced.

Particular attention has been paid to the economizing of resourses as decisive source for satisfying the needs of the economy for raw materials, fuel, energy and finished materials. Quantitatively this is being manifested in the fact that the additional need for ferrous metals and lumber will be completely satisfied through increased efficiency in their use, in cement by three quarters and in fuel and energy resources by nearly half.

The 1987 plan embodies the party's program directives for carrying out a strong social policy. The intensification of the plan's social trend is expressed in the augmentation of the increases for all types of resources allocated from their overall volume for raising the people's standard of living. Such an approach to the formulation of the plan has made it possible to plan the acceleration of the solution for a number of important social problems in comparison with the goals of the 5-year plan.

The sum of 2.8 billion rubles has been allocated for the implementation of measures on improving wages and raising the salaries for individual categories of blue- and white-collar workers, on intensifying state aid to families with children, and on improving the support and education of the younger generation and the workers' social security in 1987.

The average monthly wage for blue- and white-collar workers in 1987 will amount to around 201 rubles, and the wages for kolkhoz workers in the public sector--162 rubles. This exceeds the 5-year plan's goals.

Along with the growth in income for labor, the payouts and benefits for the populace from the public consumption funds will be increased. Their total volume will also be higher than the 5-year plan's goals for 1987.

In order to satisfy more completely the effective demand of the populace, the production of popular consumption goods and the sphere of services requiring payment will be expanded. The populace's demand for high-quality and diversified light industry goods will be more fully satisfied. The implementation of measures for significantly renovating the assortment of light industry goods and for further increasing the production of goods that are modern, stylish and in short supply has been planned. The output of cultural, personal and domestic goods will increase by 12 percent, which is higher than the 5-year plan's goals for 1987.

The overall volume of services made available to the populace that require payment will be increased by 9.5 percent as against the 1986 plan. The enterprises and organizations of all the ministries and departments will be actively enlisted to help them, regardless of the specialization and nature of the basic activities.

The total area of newly constructed housing will amount to 126.2 million square meters, which greatly exceeds the 5-year plan's goal for the current year by 15.8 million square meters--the average annual index for the previous 5-year plan. The policy of accelerating the development of housing cooperative and individual housing construction will be continued.

The 1987 plan outlines the further development and strengthening of the material base for public education and health care institutions. Using all the financing sources, kindergardens and nurseries will be put into operation with 880,500 openings, general education schools with 1,283,700 openings, hospitals will be constructed with 72,900 beds and also walk-in polyclincs capable of handling 182,100 visitors per shift, which also significantly exceeds the 5-year plan's goals for this year.

Thus, for the first time, higher goals have been established in the annual plan for the construction of housing and other social and cultural projects than had been envisioned in the 5-year plan for this year. This is a practical expression of the party's attention to social matters. The main thing now is to exploit fully the means alloted for the development of the social sphere's material base and to build these projects quickly and good.

The plan's most important economic indices are based on the goals for the acceleration of scientific and technical progress. In conformity with the decisions of the 27th CPSU Congress, particular attention is being paid to the cardinal raising of the technical level of the products put out, and frst and foremost, the machine building products.

For the purpose of concentrating the resources on the main trends of scientific and technical progress, goals have been established in the 1987 plan for the assimilation of new types of equipment and technology and new generation materials. The operation of the intersectorial scientific and technical complexes is being improved.

The realization of the goals envisioned in the complex program for the scientific and technical progress of the CEMA member-states up to the year 2000 is being ensured.

The acceleration of our country's social and economic development rests on the qualitatve transformation of the economy's industrial base.

The plan for machine building has been worked out at the level of or higher than the goals of the 5-year plan and in complete conformity with the measures adopted recently by the party and the government for the development of this complex.

In 1987 the volume of production for the machine building ministries will increase by 7.3 percent. The leading development will be in machine tool building, instrument building, computer technology production, and the electrotechnical and electronics industry. The rate of increase in these sectors will be 1.4 times higher than for machine building as a whole.

There will be an increase in the ratio of N/C [numerically controlled] machine tools in the overall output of metal-cutting lathes, of high-precision or ultra-high-precision lathes, and of the complete set of processing equipment for the food, meat and dairy and fish industries. There will be a sharp increase in the output of rotory and rotory-conveyor lines and of robotized complexes.

Unremitting attention is being paid by the party and the government to the strengthening of the fuel and power complex's sectors. High goals for its development have been envisioned for 1987. Electric power production will be increased by 60 billion kWh, which corresponds to the 5-year plan. Oil output, including gas condensate, will amount to 617 million metric tons; gas to 712 billion cubic meters, i.e., an increase of 40 billion cubic meters; and coal to 743.6 million metric tons or 10 million more than in 1986.

In the metallurgical complex's sectors, further improvement is being planned for the production structure using the leading output of the economical types of metal products. The production of rolled ferrous metals will reach 112.8 million tons, which corresponds to the 5-year plan's goals.

In the chemical industry, the production of mineral fertilizers, chemical pesticides, plastics, and chemical fibers and threads will be expanded. Using the leading rates, the production of highly efficient products will be stimulated--structural plastics, synthetic fibers and threads and radial design tires.

The volume of products put out by the woodworking and the pulp and paper industries, and first and foremost, wallboards and container packing paper and board, will increase.

The 1987 plan for the agroindustrial complex has been worked out taking into account the goals of the USSR's Food Program and the resolution of the CPSU Central Committee and the USSR Council of Ministers of 20 March, 1986, "On the further improvement of the economic management mechanism in the country's agroindustrial complex," and the other decisions of the managing bodies on the question of the development of the rural economy and its associated sectors. The volume of agricultural production, in conformity with the 5-year plan's goals, will be increased by 7.6 percent.

The production of sunflowers, vegetables, fruits and berries and meat will be stimulated using the accelerated rates. The basic part of the increase in livestock products is being envisioned as obtainable through an increase in the productivity of cattle and poultry.

The feed base will be strengthened. On this basis it has been planned to bring the production of meat in slaughter weight up to 18 million metric tons and milk up to 101.5 million metric tons, which corresponds to or slightly exceeds the volumes according to the calculations of the 5-year plan for 1987.

The volumes of purchases of agricultural products and their delivery to the all-union stock will be expanded to ensure that the food, meat and dairy industries reach the level of the 5-year plan's goals.

In the field of transportation, the quantitative and qualitative indices correspond to the 5-year plan's goals or exceed them.

In conformity with the directives of the 27th CPSU Congress and the June (1986) Plenum of the CPSU Central Committee, the plan outlines increases in capital investments for the technical re-outfitting and renovation of operating enterprises. It is being planned that basic assets on the scope of 165 billion rubles will be put into operation.

In 1987, for the first time, the transition to the planning and the financing of the construction of all the projects should be implemented in the standard time frames.

The 1987 plan outlines the further social and economic development of all the union republics. Its indices and goals are aimed at the efficient development of each region within the framework of the united economic complex.

The successful fulfillment of the 5-year plan's second-year plan stipulates the necessity of raising the operating level in each enterprise, the acceptance of all the measures for mobilizing internal reserves, more complete use of operating capacities, the unconditional fulfillment of contract obligations, the observance of the strictest method for economizing and the spreading of broad socialist competition.

12752
CSO: 1820/67

AGROECONOMICS, POLICY, ORGANIZATION

LATVIAN 'AGROFIRM' EXPERIMENT DETAILED

Moscow EKONOMICHESKAYA GAZETA in Russian No 52, Dec 86 p 11

[Article by V. Shtanov, deputy chief of the Administration for Improvement of the Economic Mechanism and Pricing of USSR Gosagroprom, and R. Tabayev, chief specialist: "The Agrofirm of the 'Adazhi' Kolkhoz"; the first paragraph is EKONOMICHESKAYA GAZETA introduction; passages within slantlines published in boldface]

[Text] Experiments to improve the organization and management of production in the APK are now being conducted in many regions of the country. Scientific-production associations, agroindustrial combines, and other structures are being created. The firm for introduction of a number of production systems on the basis of the "Adazhi" Kolkhoz in Rizhskiy Rayon of LaSSR is of interest.

The experiment's principal objective is the application of progressive production technologies for various products on the farms of the firm with the help and under the direction of the specialists of the head enterprise, in this case the "Adazhi" Kolkhoz. That is, kolkhozes and sovkhozes wishing to join the firm carry on a joint effort with it that is related to raising a particular crop or particular animal.

In addition, the task has been set of providing a comprehensive solution to the problems of procurements of agricultural products, their storage and processing, to eliminate losses in various stages of the technological cycle, to introduce waste-free production, and to bring this experience to other farms in the rayon and republic.

The firm's farms preserve their independence and the status of juridical persons. They conclude a contract with the head enterprise which sets forth the rights and duties of the parties in carrying on the joint activity. Here the "Adazhi" Kolkhoz guarantees the farms participating in the firm attainment of the crop yields, productivity of animals, and economic indicators stated in the contract provided its recommendations are carried out.

Why was the "Adazhi" Kolkhoz chosen as the head organization for conducting the experiment? A strong economic potential has been built up in it. It has qualified personnel, it has achieved a high level of production know-how, and

the most effective forms of management of the branches of farming have been tried out.

The agrofirm of the "Adazhi" Kolkhoz constitutes a production system in which kolkhozes and sovkhozes and other agricultural enterprises take part on a voluntary basis. /Their activity is coordinated along three lines: harvesting stable high yields of potatoes and manufacturing various food products from them; applying intensive technology for raising rape; and reproduction of the milking herd using the transplantation method./ The "Adazhi" Kolkhoz has built up a certain experience in all of these types of activity and as the head enterprise can provide assistance to other farms in applying them.

The head enterprise develops and helps all the participants master intensive technology, it organizes their supply of the materials and equipment they need for that purpose, and it conducts an economic analysis and makes the relevant computations for seeking out untapped internal potential for increasing the efficiency of the production system. The "Adazhi" Kolkhoz concludes contracts with scientific research, project planning and design, and other organizations, enterprises, and institutions to conduct research and to apply scientific developments and design features related to the functional efficiency of the production systems.

The firm organizes the gathering and summarization of the necessary scientific-technical information on advanced know-how both within our country and also abroad, and it conducts various experiments. And finally, the duties of the head organization include training the personnel of the participants in the system, improvement of their qualifications, conducting consultations with enterprise specialists on aspects of the production of particular products. VASKhNIL has been given responsibility for general supervision of the experiment with respect to scientific methods.

What, for example, is the production system for raising potatoes and manufacturing various products from them? The "Adazhi" agrofirm has committed itself to raising high-quality seed potatoes on a virus-free basis. After it has reproduced them on its own seed plots, it passes on the production system for raising potatoes for the market to the farms participating in the production system on a contract basis.

The "Adazhi" Kolkhoz will be involved in developing and improving the technology for raising this crop on the basis of the most recent advances of science and technology and in applying it to production. The decision has been made to bring the yield of potatoes up to at least 300 quintals per hectare and to lower the production cost and labor inputs per quintal. The agrofirm is taking upon itself all the concerns related to storing the seed potatoes and potatoes for food, relieving the economically weak farms of having to build storage facilities, and it also markets the products manufactured from the potatoes and intermediate products in the "Adazhi" Kolkhoz's own commercial enterprises. Once the system has been mastered, plans call for meeting a third of the need of the city of Riga for potatoes and potato products.

As for the production system in raising rape, in its organizational and technological aspects it is analogous to the system presented above for potato production. Plans call for increasing the total area planted to this crop up to 1,300 hectares, and to bring the average output of seed per hectare up to 23-25 quintals. The agrofirm will be taking over the rapeseed from the farms which are partners in the system for processing, which will make it possible to produce 1,100 tons of rapeseed oil a year and 2,200 tons of oilseed meal for animal husbandry.

And now a brief mention of the organization of the reproduction of the dairy herd on the basis of the transplantation method. Jointly with our country's scientific research institutes for animal husbandry and specialists of the socialist countries plans call for introducing breeds of dairy cows using the method of transplantation. The decision has been made in the kolkhoz to organize a laboratory for transplanting embryos in the early stage of their development. Plans based on this method call for annual reproduction of up to 5,000 head of highly productive cows, which will make it possible to bring milk production per dairy cow up to 5,500-6,000 kg in the agrofirm itself and up to 4,500 kg on the participating farms. At the present time the average production per dairy cow in the kolkhoz is 4,800 kg of milk.

/Economic relations between the head enterprise of the agrofarm and the participants in the production systems will be defined in contracts concluded between them, which set forth in detail the basic principles of their activity and the mutual responsibility of the parties. The entrance fees of the participating enterprises and deductions from the income realized from the results of the production activity of the firm as a whole serve as the source for financing the expenditures of the head enterprise./

The entrance fee is the initial transfer of funds to the head enterprise to reimburse organizational expenses. Its size is determined by the council of the production system as a function of its type of activity.

The rates of the deductions of the participating enterprises credited to the head farm are calculated on the basis of the value of the additional output and profit obtained and are fixed by the system's council. These deduction rates must cover the costs of remuneration of personnel, the costs of carrying out organizational and technical measures and other measures pursuant to contracts, and they must also provide profit to the head enterprise at the average level of profitability which it has had over the last 3 years.

Introduction of these systems on other farms and integration of production, procurements, processing, and marketing of farm products on that basis afford the possibility of shaping an effective mechanism for accelerated development of the economically weak farms.

7045
CSO: 1824/148

UDC 631.145

GOALS OUTLINED FOR KAZAKH APK DEVELOPMENT IN 12TH 5-YEAR PLAN

Moscow EKONOMIKA SELSKOGO KHOZYAYSTVA in Russian No 8, Aug 86 pp 13-20

[Article by E. Gukasov, first deputy chairman, Council of Ministers, chairman, Gosagroprom Kazakh SSR : "The Kazakh SSR Agro-Industrial Complex in the 12th Five-Year Plan"]

[Text] The Basic Directions for the Economic and Social Development of the USSR for 1986-1990 and up until the year 2000 set specific plan targets for realizing the CPSU's programmatic goals. The strengthened orientation towards the more complete satisifaction of the Soviet people's diverse and growing needs finds its expression in the accelerated development of sectors in the agro-industrial complex and in increases in the production of all types of agricultural products.

The Kazakh SSR has a growing role in realizing the country's Food Program. By 1990 it is planned to obtain 1.5 fold more grain in the republic than during the 11th Five-Year Plan. In the all-union division of labor Kazakhstan has been given the role of the main supplier of strong and durum wheats. During the last five-year plan 33 million tons of such wheat were procured. This is 82 percent of total purchases. Rice production increased by 726,000 tons, grain corn by 433,000, soybeans by 40,000, and rye by 359,000 tons.

Considerable work has been done to master scientifically based systems for crop production. Progressive technology for growing crops and conservation tillage systems are being introduced, land reclamation and the use of chemicals are being further expanded. Crop rotations have been introduced on a total of 34.4 million hectares at 2,263 farms in the republic (98 percent of crop land). Eighty one percent of the crop rotations introduced have been mastered (in 1980 only 65 percent were).

In 1986 the clean fallow area devoted to crops was increased to 5,343,000 hectares. This clean fallow area creates the conditions for mastering grain crop rotations in the next 2-3 years. Extensive work is being done to improve efficiency.

In 1985 the corn gross harvest continued to grow, increasing 1.4 fold the 1980 figure. There are expanded plantings of soybeans, a valuable high protein

crop. As a result of the measures taken, grain production is more stable in most grain growing regions in the republic. Regions where virgin land has been opened up have become the main grain producers in Kazakhstan. The northern and central oblasts account for 70 percent of the grain grown in the republic, the eastern and western -- 17 and the southeastern -- 13 percent.

At the same time, the grain production levels obtained do not meet the Food Program's main requirements. Grain yields depend upon weather conditions. In the past 10 years grain crop yields exceeded 10 quintals per hectare only in 1977, 1979 and 1980, while in years with unfavorable weather they declined to 6.2 quintals per hectare.

Farms in the republic will further increase crop production and solve tasks posed by the country's food program through more intensive specialization and concentration in agricultural production. Special attention should be given to increasing crop land productivity and improving the quality of crop products sold to the state.

The 1986-1990 program to increase grain production and improve the stability of grain growing makes provisions for obtaining at least 23 million tons of grain even in years with unfavorable weather, and 30 million and more tons in normal years. This requires planting grain crops on 24.6 million hectares and obtaining not less than 9.4 quintals per hectare in unfavorable years and 12.2 and more quintals per hectare in good years.

This target will be met through: the mastery of zonal scientifically based crop production systems, improvement in the efficiency of using land and chemicals, the normed supply of farms with mineral fertilizers, pesticides, sets of highly productive machinery and equipment needed to master intensive technology for grain growing.

Special attention will be given to questions in the comprehensive use of erosion prevention crop production systems on farms in the western eastern and southern oblasts. Based upon the task of increasing grain production and the growing demands of scientific-technical progress, it is planned, by 1990, to refine and publish scientifically based zonal systems for crop production in all the republic's oblasts.

In the next 2-3 years it is intended to take measures to master crop rotations on all kolkhozes and sovkhozes. Grain-fallow crop rotations with clean fallow will be mastered, considerably improving grain production stability. Primary attention will still be given to producing strong and durum wheats.

In view of the acute need to solve the protein problem, it is planned to double the area devoted to pulse crops compared to 1985. Soybean plantings will expand more than 5 fold.

Special attention will be given to corn as a crop to stablize grain production. In addition to planting it for grain in the republic's southern oblasts, it is intended to plant corn in the northern oblasts to obtain corn silage with ears in the waxy stage. Production testing of early ripening hybrids of Yugoslavian and some domestic corn hybrids on fields of the

Kustanay Agricultural Institute and on farms in Kustanay and Pavlodar oblasts shows that in virgin land oblasts even without irrigation it is possible to obtain dry grain corn yields of 30-50 quintals per hectare and 270-400 quintals of green silage per hectare.

The area of minimim tillage for grain and fallow rotations will be expanded. According to Kazakh SSR Agroprom studies, after the mastery of grain crop rotations, the introduction of minimum tillage will save 31.3 million rubles in energy, materials and labor on fall tillage alone. There are large reserves for saving material and energy resources through bringing order into work during the fall-summer agricultural campaigns.

Special attention will be given to clean fallow, improvements in its tillage, and the mobilization of other means for improving soil fertility.

Special importance is placed upon the intensification of grain production, improvements in equipment availability and measures of an organizational character to further develop grain growing in the 12th Five-Year Plan.

In the future it is planned to use intensive technology to grow grain crops on a sizable area. In addition, industrial technology will be used to grow soybeans.

In subsequent years of the five-year plan it is intended to locate grain crops grown by intensive technology not only after clean fallow, but also after the better nonfallow predecessors in the more favorable rayons in Kustanay, North Kazakhstan, Kokchetav and other oblasts.

According to studies, grain crop yield increases average 5-8 quintals per hectare. During the five-year plan the additional gross harvest will amount to 19.3 million tons, including wheat -- 17.7 million tons, corn -- 623,000 million tons, millet -- 495,000, and rice -- 456,000 tons.

Pulse production will increase 2.9 fold.

Further increases in grain production and yields will be accompanied by considerable growth in mineral fertilizer deliveries. It is foreseen that during the 12th Five-Year Plan grain crop fertilizer needs will be completely met. Each hectare of grain crops grown by intensive technology will receive 78 kg of fertilizer active ingredients. Grain crop yields are rising through increased use of organic fertilizers. By 1990 their application per hectare of crop land will be 1-1.3 tons (in the last five-year plan the application was 0.7 tons).

Substantial increases in yields can be obtained through land improvement and reclamation. Chemical methods of reclamation are increasingly used, and widespread use will be made of natural potentials for the self-reclamation of alkaline land.

Integrated pest management methods are starting to be actively introduced on grain, corn, rice, soybeans and other crops. Herbicide applications are also increasing.

During the current five-year plan it is necessary to sharply increase the productivity of irrigated land. In accordance with the Long Term Program for Land Reclamation there are provisions to increase grain production on irrigated land from 1,795,500 tons in 1986 to 2,700,000 tons in 1990. Yields will increase from 32.5 to 42 quintals per hectare, including: corn -- 46.5 millet -- 30, and soybeans -- 14.5 quintals per hectare.

Specialized zones for the guaranteed production of irrigated grain corn have been set up in the republic's southern oblasts. These zones will be expanded through the organization of new corn growing sovkhozes.

Considerable resources are supposed to be invested in irrigation. In the forthcoming five year plan it is intended to spend about 4 billion rubles on water resources construction. Newly irrigated land must be put into operation, presently irrigated land redeveloped, reclamation conditions and water supplies improved.

Grain crop seed growing in the republic will be organized in accordance with the zonal crop production systems in each oblast. Scientific research institutions and elite seed growing farms are meeting farms' needs for elite seeds, making possible timely variety replacement and renewal. There are 493 farms growing and preparing varietal and hybrid seeds for grain and oil crops. During the past five-year plan the average annual production and farm sales of higher reproduction rate seeds for variety replacement and renewal was 80,000 tons. New, high yielding grain crop varieties with high technological and commercial qualities will be actively put into production.

Measures are foreseen to further strengthen seed growing's material and technical base. This involves the construction of comprehensive points for seed processing and storage at specialized seed growing farms.

The necessary reserve and carryover stocks will be created at all farms so that when grain crops are grown by intensive technology all the seed used will be first class planting standard, sized and having high growth strength.

These measures will be accompanied by increased efficiency in the use of equipment in grain growing, the introduction of new progressive forms for work organization and payment based upon cost accounting and collective contracts.

The republic's kolkhozes and sovkhozes are also working to increase the production and sales of animal products to the state.

The conversion of poultry production to an industrial basis has been completed. This made it possible to significantly improve meat and egg supply to the public. Much has been done to industrialize swine production, and to organize the intensive raising and feeding of cattle. Horse and camel breeding, traditional sectors in Kazakhstan, are being developed.

Year after year there are increases in the mechanization of laborious processes in animal production. At animal farms on kolkhozes and sovkhozes in the republic cattle raising is 66.4 percent comprehensively mechanized, swine

raising -- 68.1 percent, sheep raising -- 11.4 percent and poultry raising -- 91.5 percent.

During the 11th Five-Year Plan the number of cattle on sovkhozes and kolkhozes increased by 2 percent, horses by 7, camels by 13, and poultry by 29 percent. Because of the dry weather the swine herd declined by 6 percent and the sheep and goat herd by 3 percent.

The average annual procurement of cattle and milk increased by 12 percent, eggs by 18 percent, wool by 7 and karakul by 3 percent.

The collectives at the Kolkhoz imeni 40 Years of October in Panfilovskiy Rayon, Taldy-Kurgan Oblast took only 4 years to fulfill its five-year plan target for the production and state deliveries of all animal products and produced, above its plans, 14,248 tons of cattle, sizable amounts of milk and other animal products.

The Sovkhoz imeni the Newspaper PRAVDA, in Ural Oblast annually delivers the state 3,500-4,000 head of cattle with an average live weight exceeding 490 kg. More than 84 percent of them are in higher states of nourishment.

However, there are serious shortcomings in animal production. In general, the republic only fulfilled its meat production plan by 95 percent and its karakul plan by 99 percent.

Last year the average live weight of cattle delivered to the state was 324 kg (in 1981 it was 381 kg); for sheep it was 34 kg (in 1971 -- 41 kg), and for swine, 92 kg (20 kg less than realistically possible).

Milk production per cow increased somewhat during the year, but it was only 1,993 kg.

The livestock reproduction situation is extremely unsatisifactory. In 1985 the figures, per 100 mother animals, were: 67 calves, 63 lambs, 58 colts.

As can be seen, farms have reserves to increase animal product output. It is intended to actualize them through improved productivity based on the broader introduction of intensive technology, breeding improvements, more specialization, strengthening of the feed base, improvements in veterinary services, comprehensive mechanization in the sector, and by creating the needed housing and social-service conditions for animal husbandry workers.

Cattle raising will remain the leading sector, but sheep, swine and other animal production will be developed. Meat cattle raising will continue to have a large role in increasing meat production. By 1990 beef production will grow by 26 percent compared to 1985.

It is intended to increase meat production primarily by intensifying young animal raising and feeding. By the end of the 12th Five-Year Plan it is presumed that the live weight of cattle sold for meat will average 430 kg, swine 105, sheep and goats 40 kg. Two hundred and seventy farms, which will feed 520,000 cattle, will be switched to intensive technology.

The further development of poultry, rabbit, horse and camel raising will make a sizable contribution to increasing meat supplies.

Improvements in herd structure and in selection-breeding work are an important reserve for solving the meat problem. The Kazakh White-Headed, one of the most highly productive meat breeds, and other promising breeds are being raised in the republic. It is intended to accelerate qualitative improvements in herds through improvements in work on interbreed crossing using sires from better world breeds.

Dairy cattle raising will develop on the basis of industrial technology. This presumes the expanded reproduction of a highly productive herd for complexes through the extensive introduction of systems for the directed raising of young animals in specialized animal farms at regular farms, improvements in cattle keeping and feeding and improvements in herd health.

By 1990 the yield per cow will increase by 272 kg over 1985 and will average 2,265 kg. It is intended to increase butterfat content of the republic's milk by 0.2 percent.

In order to attain this goal an entire complex of selection breeding measures will be carried out to create new, highly productive animals meeting modern technological requirements. Maximum use will be made of existing breeds, the breeding range will be expanded and milk butterfat and protein content increased.

Placing special importance upon the preservation and processing of agricultural products, the Party and government foresee a sizable long term expansion and reconstruction of existing enterprises in the meat and dairy industry the construction of new ones, and the introduction of resource conserving processes to more comprehensively process livestock and milk.

Kazakh SSR Gosagroprom has capacity to process the following per shift: meat -- 2,349.4 tons, whole milk products -- 2,240.4 tons, animal oil -- 260 tons, dry nonfat milk and whole milk substitutes -- 56.6 tons.

Because of the sharply seasonal arrival of raw materials there are great difficulties in the timely and comprehensive processing of cattle, poultry and milk. As a result, during the mass processing season some oblasts must haul in livestock from other oblasts within and outside the republic.

The condition of the material-technical base at enterprises in the meat and dairy industry still does not permit the comprehensive processing of raw materials and the introduction of waste free technology at several enterprises. However, processing enterprises' work within the agro-industrial complex permits the concentration of capital investments and the intensified development of their production-technical base. Thus, in the 12th Five-Year Plan it is intended to allocate 450 million rubles to the construction of production facilities (in the 11th Five-Year Plan 246 million rubles were allocated).

In addition, 58 million rubles of agriculture's resources will be allocated to the construction of interfarm units for producing dry nonfat milk and whole milk substitutes. In order to bring processing enterprises closer to raw material sources it is intended to build, rebuild and reequip lower level milk plants, and dry nonfat milk and whole milk substitutes units.

Two hundred fifty seven million rubles will be invested in the technical reequipment of meat and dairy industry enterprises. The active component of fixed capital will be 60-70 percent renewed. These measures will result in the introduction of new, highly productive equipment, flow-mechanized lines and automatic machinery, including lines for packaging semiprocessed meat and sausage items in plastic, for "Pure-pak" packaging milk and dairy products, for packaging soft cheeses and sour cream in polystryene cups, as well as other equipment.

In order to more completely use dairy resources it is intended to extensively introduce membrane technology, including ultrafiltration units for processing nonfat milk and whey. This will make it possible to, by 1990, increase skim milk and buttermilk production to 65 percent and whey to 60. In 1985 the figures were 54 and 35 percent.

Measures are planned to assure 100 percent centralized transportation of livestock and milk by 1990.

Completing the entire complex of measures will increase labor productivity and reduce the share of manual labor from 52.1 percent in 1985 to 41.2 percent in 1990, increase meat supplies by 125,000 tons and dairy product supplies by 2,430,000 tons.

The Kazakh SSR Gosagroprom food industry will be significantly developed in the 12th Five-Year Plan.

It is foreseen that planned indicators will be attained through increases in labor productivity, the introduction of progressive technology and the more rational and effective use of raw material and production potential in the agro-industrial complex.

In compiling the capital construction plan for the food industry 69 percent of capital investments are to be allocated to the technical reequiping and reconstruction of existing enterprises. This was guided by M. S. Gorbachev's instructions at the CPSU Central Committee Conference on questions of accelerating scientific and technical progress that the main reliance should be placed upon the technical reequipment of enterprises, savings in resources and assurances of product quality,

During the 12th Five-Year Plan capacity for producing confectionary items will by increased by 32,800 tons annually. This includes 14,400 tons at confectionary factories in Alma-Ata, Karaganda, Kustanay, Aktyubinsk and Uralsk to be attained through technical reequipment and partial reconstruction. Compared to 1985, this year sweets production will grow by 2,000 tons, carmel by 780 tons and wafer production by 630 tons.

The republic's first marmelade line will be installed at the confectionary factory at Alma-Ata, the assortment of dietetic and diabetic confectionary items will be expanded and production increased.

The nonalcoholic beverages industry will receive special development. It is intended to increase its production capacity 3 fold. Implementing the Party and government decisions in the struggle against drunkeness and alcoholism, during this Five-Year Plan vodka production will be curtailed 3 fold and wine production more than 2 fold.

Through the reprofiling of vodka and wine plants to produce other products, the production of bottled vegetable oil will increase 5 fold, mayonnaise production will be organized and there will be increases in the production of table vinegar, marmelade, kvass and other products in increased public demand.

In order to fulfill the program for reprofiling industrial sectors, it is necessary to organize the production of carbonated drinks, candied fruits, sulfated puree and semiprocessed fruit products through the rational use of local raw materials.

Kazakh SSR Gosagroprom must solve serious problems in supplying food processing enterprises with raw materials. Because of raw material shortages during the 11th Five-Year Plan processing enterprises in the sector failed to produce 296,000 tons of granulated sugar, 70,000 tons of vegetable oil and 16 mub [million standard cans] of fruit and vegetables.

During the 12th Five-Year Plan it is necessary to considerable increase food product output, improve its quality and packaging and, on this basis, improve the population's food supplies.

During the 12th Five-Year Plan 1.7 fold more is supposed to be invested in the food sector's development than was invested for these purposes in the 11th Five-Year Plan.

It is necessary to continue the search for more rational alternatives for using raw materials and for the production introduction of waste free and low waste technologies. For example, together with the Kazgipropishcheprom [Kazakh Food Industry] Institute, the Issyk Fruit and Grape Sovkhoz has organized the production of sulfated puree and applesauce. The production of candied fruits has been organized at the Michurinskiy cannery.

In view of Kazakhstan's favorable climate, the joint efforts of all elements in the Gosagroprom will improve the procurement and processing of fruits, berries, vegetables and medicinal plants in order to meet the public's demand for food products and drinks as much as possible.

The human factor is the main tool in scientific-technical progress. Based upon the best achievements of science and technology, modern production is making rapidly growing demands not only upon machinery, but also upon specialists who create and control it. Enterprises in the sector are systematically working to

improve the qualifications and skills of engineering technical personnel and workers.

Great attention is given to creating a good psychological climate at collectives and to reducing personnel turnover. Plans for collectives' social development make provisions to improve their social and personal service conditions.

The republic's agro-industrial complex has huge technical potentials making possible increases in agricultural output. High levels of work mechanization will be attained.

However, we still have a large share of manual labor. Vegetable growing and the harvesting of potatoes, fruits and grapes are poorly mechanized. Only one-fifth of vegetable farms and two-thirds of cattle facilities are comprehensively mechanized. Much manual labor is used in construction and auxiliary operations.

Solutions to the tasks facing agriculture depend upon the level of equipment availability, its quality, reliability and appropriateness.

However, industry, in particular, the Tractor and Agricultural Machinery Building Industry, is slow in mastering the production of new machinery and improving its quality and reliability. Much of the machinery produced must be replaced. There are no sets of machinery for growing potatoes and vegetables and working alkaline soils. The production and delivery of wide span headers and swathers for harvesting grain crops and of highly productive grain cleaning machines has not been organized. Equipment costs are unjustifiably high and do not correspond to its productivity. Funds allocated to the republic to create a series of machines do not meet our requirements. There are very slow deliveries of row crop tractors, corn and hay harvesting combines, feed preparation machinery, buses, truck cranes and earth moving equipment.

There is concern about the republic's supplies of ZAU-3 grain drill loaders (it was delivered 210 of an order for 2,174), BTD-7 heavy disk harrows (721 of 2,319). In spite of some increases in allocations for spare parts compared to the 1985 levels this year there will be an acute shortage of some parts for the Kirovets and DT-75T tractors, the GAZ-53 and ZIL-130 vehicles and tillage equipment. Under these conditions it is especially important to improve the efficiency of equipment use, economically and rationally use material resources, particularly spare parts, during equipment repair and servicing and make maximum use of potentials for part rebuilding. It is our urgent task to, while effectively using available equipment, widely introduce intensive and industrial technology, the experience acquired at progressive farms and scientific-technical achievements, increase work mechanization in all agricultural production sectors and reduce machinery maintenance costs.

Dynamic development in the agro-industrial complex depends to a great extent upon further improvements in the planning system and economic mechanism. In the system of measures taken to restructure the economic mechanism an important role is given to further improvements in all levels of management.

There are still many problems which must be solved for the new management organs. One of them is improvements in the economic mechanism for operations.

The basic directions for improving the APK's economic mechanism are: improvements in the efficiency of economic tools and stimuli, optimization of management structure in all spheres of activity and at all levels and improvements in the price system.

The spread of new cost accounting relations based upon collective forms of organizing and stimulating labor in all sections of agro-industrial production is especially urgent. Much is being done to reduce the prime cost of agricultural output and improve labor productivity. Intrafarm accounting and collective contracts are being introduced on kolkhozes and sovkhozes everywhere.

The introduction of intrafarm accounting and collective contracts and improvements in the technical and technological standards of production will permit farms and enterprises to significantly increase the production of all types of agricultural products in the 12th Five-Year Plan and to improve the economic efficiency of the republic's agro-industrial complex.

11574
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WEATHER CONDITIONS, SEED SITUATION IN SOUTHERN UKRAINE

Exemplary Farm Operations

Moscow TRUD in Russian 9 Oct 86 p 1

[Article by I. Ostrovskiy, Dnepropetrovsk Oblast: "Fine Ears"]

[Excerpts] Prior to the trip out to the farm, RAPO [rayon agro-industrial association] officials showed me the operational summary on the course of the corn harvest. The picture for Solonyanskiy Rayon was quite varied and regrettable for many: in the columns entitled "Fulfillment of Plan," the figures were extremely modest. Yes and how could the plans be fulfilled when some kolkhozes are presently obtaining less than 1 ton of ears per hectare. The same explanation was given by different specialists: the dry summer. Even local old-timers could not recall such hot weather and scanty precipitation occurring in the past. But indeed the Progress Kolkhoz operated under the same conditions. Why was it not adversely affected by the drought conditions?

Usually, when corn is cut down, the rows are not visible -- everything is covered by green weeds. But here there is not a trace of weeds, only black earth remains behind the combine.

"The industrial technology helped us to eliminate weeds almost completely. Our corn was able to utilize fully the moisture which accumulated in the soil during the winter and spring. And if some areas are experiencing poor crops, there is a simple explanation -- weeds consumed the moisture intended for the crops."

The Progress Kolkhoz in Dnepropetrovsk Oblast has long been known as a strong farm. Here the specialists appreciate new developments, they undertake bold experiments and they introduce leading technology into operations on an extensive scale. For example, this kolkhoz was the first in the region to cultivate corn without the use of manual labor. Non-mouldboard soil cultivation is being employed on the entire area and intelligent use is being made of herbicides and mineral fertilizers. Despite many problems and expenditures, the results are nonetheless gratifying. The intensive technology ensures stable grain yields during all types of weather. It was especially impressive during this past difficult summer. Commencing with the very first days of autumn, the Pridnepr grain growers looked for rain and yet

the weather did not change. The optimum periods for sowing winter crops passed and the anticyclone showed no sign of departing. The agronomists entertained many doubts -- if the sowing was carried out in dry earth, the seed would not germinate and if too much time was lost the winter crops would not appear prior to the snow. It was only at the Progress Kolkhoz that the workers carried out their tasks in a calm manner during this complicated situation.

"We decided to reduce the size of the fields for winter crop sowing" stated the kolkhoz chairman, "At the present time, fertilizer has been applied to the fields and the soil has been prepared for the spring operations. We will increase the corn sowings to 2,000 hectares -- it will compensate us for the shortage in grain. Based upon experience, we are convinced that this crop will furnish a strong yield"

As yet, there are not many farms in the Pridnepr regions that are capable of working in like manner as the Progress Kolkhhoz. But there will soon be more of them. In accordance with the plan for introducing a scientifically sound farming system into operations within the oblast, the plans call for all corn to be grown using the intensive technology during the present five-year plan.

Snow Retention Work

Moscow SELSKAYA ZHIZN in Russian 14 Jan 87 p 1

[Article from Kirovograd: "They Are Accumulating Moisture"]

[Text] The grain growers were not dismayed by the abundant snowfalls -- a rare phenomenon in the southern Ukraine. Aware of the true value of winter moisture, a majority of the farms commenced snow retention work. And thus at the present time, in whatever direction you travel in the steppe region, you will see snow windrows stretching out for dozens and hundreds of kilometers along the highways or perpendicular to them.

The farmers in Onufriyevskiy Rayon commenced this work out on their winter fields earlier and more efficiently than others.

January Thunderstorm

Moscow SELSKAYA ZHIZN in Russian 27 Jan 87 p 4

[TASS report from Kiev: "Thunderstorm in January"]

[Text] Many residents of Kiev witnessed the thunderstorm during the middle of winter. Streaks of lightning intersected the sky, claps of thunder were heard and snowflakes fell to the ground.

"This phenomenon came about as a result of a comparatively warm mass of air in the republic being replaced by a cold mass" stated the chief of the Department of Meteorological Forecasts of the Ukrainian Hydrometeorological Center R. Sosnovskaya, "The cyclone which occupied almost the entire European part of the country, with its center to the south of Leningrad, is moving to

the southeast along a broad front. Generally speaking, January this year in Kiev turned out to be cold and snowy -- the average monthly temperature was considerably lower than the norm.

Seed Plan Fulfilled

Moscow SELSKAYA ZHIZN in Russian 18 Dec 86 p 1

[Article by I. Germakovskiy, SELSKAYA ZHIZN correspondent: "Concern for Seed"]

[Text] The farmers in Chernovtsy Oblast are diligently preparing for their spring sowing operations. The plan for laying in spring crop seed has been fulfilled here by 123 percent. All of it has been classified as being of 1st class quality. On farms in Zastavnovskiy, Kitsmanskiy, Kelmenetskiy and Storozhinetskiy rayons, 146-130 percent of the seed is of 1st class quality. Through the use of high quality seed, the farms are annually obtaining high yields. This year, for example, the kolkhozes Rossiya, 30 Let Pobedy, imeni Sverdlov, imeni 20th Partsyezd and many others obtained yields of 35-40 or more quintals of barley and peas per hectare. The oblast is also relying upon the use of promising varieties: Dzhordzhiye barley and Truzhenik peas.

Improvements have been realized in the preparation of seed for spring crops on farm in Ternopol Oblast. Towards this end, specialized seed production teams were created at many kolkhozes and sovkhozes. Moral and material incentives have been developed for them. A bonus is being paid for each ton of 1st class seed. The best experts in carrying out this work are being discussed in the local press and on radio. The farmers in Gusyatinskiy and Podvolochisskiy rayons are setting a fine example in this work; they have laid away a good supply of high quality seed.

Unfortunately, the experience of the best workers has still not been made available to all of the oblast's grain growers. In particular, the preparation of seed is lagging behind on farms in Berezhanskiy and Kozovskiy rayons. Yes and the situation throughout the oblast as a whole leaves a great deal to be desired. Ninety one percent of the seed is of 1st class quality. And the goal is to raise the seed to a high level of quality.

The work is being adversely affected by the non-rhythmic work of seed cleaning plants and points. The chief agronomist of a seed production group of the oblagroprom [oblast agro-industrial committee] P. Chornenkiy has admitted that, despite the requirements, all five enterprises are servicing only those farms on the balance sheet of which they are included. And why no borrow from the Lvov workers their fine experience in creating inter-farm seed production complexes? Here each such enterprise prepares seed for all farms in the rayon and delivers it to the assigned areas using its own transport. It provides methodological direction in the use of the seed. This eliminates sowing carried out using seed of low reproductions and it ensures the development of high and stable grain crop yields.

Changes in Grain Field Structure

Moscow SELSKAYA ZHIZN in Russian 1 Feb 87 pp 1-2

[Article by V. Naglyanets, chairman of the Pokrovskiy RAPO Council, Dnepropetrovsk Oblast: "Keys To the Spring Crop Fields"]

[Excerpts] Many farms in Dnepropetrovsk Oblast intend to compensate for a possible shortfall in winter crop grain by increasing considerably their spring crop yields. Towards this end, an optimum structure has been developed for the areas under crops, in which the principal role is played by corn, barley and peas.

The farms in Pokrovskiy Rayon are supplying the state with everything that the fields and farms can furnish -- milk, meat, beets, sunflower seed, vegetables, fruit, eggs and wool. Nevertheless, the chief product continues to be grain and thus we are constantly striving to increase its production. The rayon's grain plan for this year is to produce 136,700 tons.

In order to fully appreciate the above figure, allow me to cite still another -- 32.4. The average number of quintals of grain which must be obtained from each hectare if the plan is to be realized. The total increase in the production and procurements of grain, compared to the annual average level for the 11th Five-Year Plan, will be 19,400 and 21,000 tons respectively. The obligations undertaken by the rayon's APK [agro-industrial complex] workers call for over-fulfillment of the procurement plan.

Unfortunately, owing to the prolonged drought, we were able to sow winter crops in the autumn only on 11,000 hectares. This was less than one half of the area planned. And reliable seedlings were obtained on one third of this amount -- 8,000 hectares. And indeed the winter crops were our main hope. Now 77 percent of the gross grain production must be obtained by means of spring crops. We have fulfilled the plan for grain sales to the state for the 1st year of the 12th Five-Year Plan and we will fulfill it for the second!

Our experience in this regard is similar to that of others. With regard to the structure of the grain fields, the agro-technical practices and the technology, perhaps these aspects should be discussed in greater detail. We are at times solving these problems in a unique manner. True, with regard to the agricultural strategy employed on the winter fields, there have been no special "readings" or recommendations received from the oblast. We are growing wheat on 5,000 hectares using the intensive technology and, as a result, we expect to obtain not less than 32,000 tons of strong and valuable grain. For resowing, we rely to a decisive degree, similar to others in such situations, upon two "insurance" crops -- grain corn and barley. But what trait is emphasized in increasing the areas for these crops and what ratio should be maintained between them and the remaining grain crops? Here it was impossible to proceed without disagreements.

The oblast authorities insisted that as much corn as possible be sown. There was one conclusion and it did not arouse any doubts: in terms of its potential, corn was beyond competition. Such was the case. Only one cannot

live for just one day, disrupt a correct crop rotation or neglect the mastering of scientifically sound crop rotation plans. The fact that corn is a labor-intensive crop must be taken into account. Not all of the farms are organizationally or technically prepared to double or triple their corn sowings. How many examples and facts is it necessary to cite, when even the crop rotation areas are removed prior to winter? And at such times it is possible to harvest no more than one half of the crops grown.

Our structure is characterized by balance in terms of the more important production-economic criteria. The plans call for grain corn to be sown on 14,400 hectares. This is 6,400 more hectares than we sow during most years and yet considerably less than that called for by the oblast. We allocate the same amount -- 14,400 hectares -- for barley. Here the increase for the crop rotation norm is greater -- 8,400 hectares. And all because the rayon's farmers selected the "keys" for this crop and mastered very well the technology for its cultivation and harvesting. It is considerably less labor-intensive than corn and it provides us with high yields: the rayon's average for the past 3 years was 29.7 quintals per hectare and on leading farms -- 35 and even 40 quintals.

Barley is a plastic crop which has no equal among field crops in terms of responsiveness to fertilization. Noticeable results have been achieved throughout the rayon from the extensive use of pre-sowing application of 400 kilograms of ammonia liquor to the soil per hectare and during sowing -- 15-20 kilograms (in active substance) per hectare of phosphorus and compound fertilizer to the rows. The plans call for barley to be grown on 5,000 hectares using the intensive technology, in order to obtain almost one third of the gross production of grain -- 42,400 tons.

In order to prevent losses during harvest operations, we will initially cut down the pea and rye crops and thereafter we will commence the mass mowing of wheat. On a specific day, we will convert all equipment over to harvesting the barley. If these measures are not taken, a shortfall in yield is inevitable. We will set aside 3-4 days for harvesting all of the barley sowings.

Corn will obviously play an important role in carrying out the "Grain-87" Program. The plans call for this program to produce not less than 40 quintals of grain per hectare and 58,000 tons in all. Even under the conditions encountered last year, six farms obtained more than 40 quintals of grain per hectare and the rayon as a whole -- 35.3 quintals. The intensive technology has been mastered in all areas. In those areas where a yield of 50 quintals was programmed, an average of 12 tons of organic and 134 kilograms (in active substance) of mineral fertilizer per hectare was applied during the autumn in behalf of the principal cultivation.

One particular reserve for increasing the gross yields of corn grain was taken into account -- the periods for harvesting the crop. A check established the fact that the Niva combine, equipped with a PPK-4 attachment, operates considerably better than a Khersonets-7 unit. Last year, taking this fact into consideration, the rayon's farms purchased additionally, over and above

the funds available, eight PPK-4's and four Khersonets-9 combines. This year they ordered 10 more attachments.

We will expand our area for peas and increase it to 3,600 hectares. In addition to a seed sowing, we will also plant it in a mixture with barley -- this will raise noticeably the return from a hectare.

Certainly, even with the selected structure for the grain fields, there will be deviations from the accepted rotation in the majority of crop rotation plans. Under these conditions, the specialists in the various areas will distribute their crops in a manner so as to be able to reenter the rotation as rapidly as possible.

7026
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FORESTRY, TIMBER

TIMBER INDUSTRY NEW ECONOMIC MANAGEMENT TERMS DETAILED

Moscow LESNAYA PROMYSHLENNOST in Russian 25 Dec 86 p 2

[Article by Ye. Romanenko, deputy chief, Planning-Economic Administration, USSR Minlesbumprom [Ministry of the Timber, Pulp and Paper and Wood Processing Industry], candidate of economic sciences: "New Economic Conditions"]

[Text] As is known, on 1 January, all associations and enterprises in the USSR Minlesbumprom are to be converted to the new economic conditions. The main goal of this large scale measure is to increase output, improve product quality, attain high growth rates in labor productivity based upon scientific and technical progress, improvements in planning, strengthening of cost accounting, expanding rights and enhancing the economic responsibility of labor collectives for final results.

PLANNING

What does this mean in practice? Primarily, there is a sharp reduction in the number of planning indicators set from above. Starting on 1 January 1987, the following indicators are set for the five-year and one year plans for the economic and social development of associations and enterprises:

Growth rates of commercial output (calculated);

Production of the main types of output (in physical terms);

Main targets for the development, creation, introduction and expanded use of new equipment and techniques;

Share of products in higher quality categories as part of total output (calculated);

Targets for foreign exchange earnings, including convertible currencies (in annual plans);

Production volume for nonfoodstuffs mass consumption goods (in retail prices);

Profit;

Growth in labor productivity;

Marginal costs per ruble of commercial output;

Wages fund for nonindustrial personnel;

Limits on state centralized capital investments and construction-installation work, the introduction of fixed capital, production capacity, housing and other social facilities through the use of these capital investments;

Limits on material-technical resources (for consolidated assortment) -- in the five year plan and in annual plans -- funds for basic types of material-technical resources and targets for average reductions in norms for their consumption.

However, in order to convert from administrative methods of management to economic methods and to fully guarantee the independence of operating elements, it is necessary to have unified economic norms and rules in the sector. These have already been developed.

In planning the economic management activity of associations and enterprises for the five-year plan, economic normatives must be used: payment for production funds; deductions from calculated profits to the state budget and to the ministry's reserve fund; normatives for the growth of the wages fund for industrial-production personnel; the formation of wages funds for managers, engineering-technical workers and employees and, separately, designers, technologists and scientific workers, as well as the relationship between growth in average wages and labor productivity (in annual plans); normatives for the formation of funds -- foreign exchange deductions, production development, social-cultural measures and housing construction and material incentives.

Control figures and normatives are given to associations and enterprises at the proper time, prior to the beginning of plan formation. These cannot be changed during the five-year period. It should be noted here that USSR Minlesbumprom and the appropriate union republics ministries have been authorized to differentiate economic normatives for individual associations and enterprises.

Based upon approved indicators, limits, contracts and orders for product delivery, associations and enterprises independently work out five-year and annual plans. These should provide for the efficient use of material, labor and financial resources.

The size of capital investment, construction-installation and contract work, and the introduction of fixed capital, production capacity, housing and other social facilities through the use of funds for production development and social-cultural measures and housing construction are included in ministry plans in accordance with suggestions by associations and enterprises.

Measures have been taken to eliminate the negative influence of new construction upon the efficiency of existing production operations. For newly

introduced enterprises the five-year and annual plans have separate entries for the wages, material incentives, social-cultural measures and housing construction funds.

Limits (on growth) of the number of workers and employees are determined by associations and enterprises independently, based upon the indicators they approve and agree upon with territorial planning organs at drafting stage for five-year and annual plans.

An important role in the normal work of any enterprise is played by the deadlines which are included and approved in annual plans for production and distribution and for which material-technical resource funds are allocated. Plans should be compiled so as to make it possible for USSR Gossnab to assure the delivery, to enterprises and associations, of the appropriate orders (supplier attachment plans) not later than two months prior to the beginning of the planned year.

It is equally important to balance annual plans for value and physical indicators. Enterprises and associations are obligated to be unwaveringly guided by state targets for producing the most important products (in physical terms) and contractual obligations for delivery.

In discussing the expanded independence of labor collectives in the solution of economic management questions it is also fitting to note something else. Ministries and all-union associations have been given the right to authorize subordinate enterprises to sell, at their own discretion, half of their above-plan production-technical products. However, this is permitted only on the condition that contractual obligations for delivering these products' are completely fulfilled.

FUNDS

At the present stage the trouble free functioning of the economic mechanism is impossible without direct ties between results from the activities of enterprise and labor collectives -- payment of labor, incentives, cultural and service benefits. It is necessary that the additional effects obtained by the intensive labor of a collective remain at its disposal and stimulate further improvements in work. A collective should be equally accountable for unutilized reserves and potentials. The new procedure for forming the appropriate funds is directed towards solving this task.

The wages fund for industrial production personnel at associations and enterprises is determined by its size in the previous year and by a growth norm for each percent increase in commercial output.

If a large production unit is put into operation, the union ministry gives the appropriate associations and enterprises increased wages funds for the planned time needed to attain the designed techno-economic indicators. If, however, the indicators attained are reached with less than the planned number of workers, then the ministries of union republics or the all-union production association can keep the wages fund saved and put it at the disposal of the collective which successfully handled the task. There are also provisions for

a variant in which enterprise work results temporarily deteriorate during the massive introduction of new, highly efficient technology. Then the ministry has the right to use its centralized funds and reserves to compensate the enterprise for reduced wages funds and material incentives.

Features specific to logging have also been included. Those associations and enterprises for which working conditions change due to deterioration in forest resources and for which plans do not provide for increased output, can, upon ministry authorization, be given, instead of normatives for the formation of wages funds, an absolute wages fund for industrial-production personnel.

The material incentives fund for production associations and enterprises is based on its size as determined by the plan for the base year, 1985, and for growth calculated according to normatives -- for each point (percent) in the reduction in marginal costs per ruble of commercial output compared to last year. For logging associations and enterprises use can be made of other fund formation indicators more accurately characterizing their efficiency. For example, instead of costs per ruble of commercial output, these can be growth in labor productivity and the production of commercial timber.

It is important to note that the absolute size of allocations to the material incentives fund increase or decrease substantially depending upon fulfillment of the output sales plan, taking into account obligations for contracted deliveries and orders. Thus, for each 1 percent non-fulfillment of the delivery plan, the material incentives fund is reduced by 3 percent, while if it is fulfilled it increases by 15 percent.

The fund for social-cultural measures and housing construction is formed similarly to the material incentives fund, however, its growth is calculated somewhat differently. It is increased by 4 percent for each 1 percent increase in labor productivity and improved results compared to last year. Minlesbumprom, union republic ministries and VPO can differentiate subordinate enterprises with regard to this normative depending upon their requirements for housing and children's institutions.

Labor collectives at production associations and enterprises independently decide how to use this fund. Its resources are not subject to withdrawal.

Capital investments financed by this fund are included separately in the plan as noncentralized ones and are provided with the required material resources and limits on contract work.

If necessary, resources for the construction of housing and other social projects can be partially increased through the material incentives fund. However, such correctives are made in the five-year and annual plans only upon agreement with labor collectives.

The production development fund is formed according to stable normatives approved for the five-year plan. It is intended for the technical modernization of associations and enterprises. Resources in this fund are not subject to withdrawal.

Additional outlays for the technical reequipment of associations' and enterprises' fixed productive capital (above plan limits on state capital investments) can be made through part of depreciation allowances intended for major repair. Construction-installation work is authorized only in amounts needed for installing equipment.

Enterprises are given expanded potentials for planning-design work in the creation of new technology and are compensated for increased outlays during its introduction. They are also given the right to independently, upon agreement with ministries, use some resources from the science and technology development fund for these purposes.

The new conditions have a number of other distinguishing features. Specifically, in order to accelerate an enterprise's economic development, its manager is authorized to transfer, upon agreement from the labor collective, part of the resources from funds (material incentives, social-cultural measures and housing construction, production development), to related enterprises, and construction and scientific-research organizations. The idea behind this innovation is to strengthen the incentive for the most rapid solution to difficult technical problems and to accelerate technical modernizaton and the construction of nonproduction facilities. Another innovation is associations and enterprises being given the right to form financial reserves (up to 5 percent of the normative for their own circulating capital), using profit remaining at their disposal.

It is forbidden to redistribute profit from profitable enterprises to cover losses and other expenses at those which are working poorly. Planned loss enterprises will be given limited subsidies during the five-year plan. These limits should be progressively curtailed by the end of the five-year plan.

In order to concentrate resources formed at higher organizations, a monetary reserve fund will be set up, according to stable normatives, at USSR Minlesbumprom and union republic ministries. It will be formed from deductions from subordinate enterprises' profits and used for the following purposes:

Financing plan outlays from planned loss and low profit associations and enterprises within the limited subsidies established;

Financing scientific-research and planning-design work and other general sectoral expenditures (in a single fund for the development of science and technology);

Creating reserves for material incentives and social-cultural measures and housing construction funds;

Giving temporary financial assistance to associations, enterprises, economic organizations, etc.

GOODS FOR THE PEOPLE

A fundamental improvement in quality and expansion of the assortment of mass consumption goods are among the most important national economic tasks. It is completely understandable that under the new economic management conditions, enterprises specializing in these goods obtain several additional rights making it possible for them to accelerate their development. For example, they are given incentives to establish long term economic ties with enterprises in related sectors and with trading organizations. Such ties should be formed by economic contracts which, as a rule, cover several years.

These enterprises are given a number of privledges. For example, to more completely satisfy the demand for housing, children's preschool institutions and other social and cultural-service facilities when there are shortages in the social-cultural measures and housing construction fund, they have the right to obtain long term credits for 75 percent of construction costs. The credits are paid back over a six year period after these facilities are put into operation.

Above the limits on state capital investments, enterprises can take additional measures to increase the production of new mass consumption goods. They are also given bank credits of up to six years for these purposes. These are paid off through the production development fund. In addition, they are also authorized to pay off such credits by using up to 50 percent of the turnover tax obtained from increased production of such goods. Such taxes are included in calculating the payback rate from outlays together with profit from increased production of such goods.

Some of the resources obtained from the sales of new, improved quality goods (through price markups used to give bonuses to workers) can be allocated to related enterprises and trading organizations. These resources should be used to provide incentives to collectives in related (integrated) brigades on cost accounting working in different enterprises and organizations.

A new procedure is established for markups on wholesale prices for products with the "N" index. Fourty five percent of the total markup is entered into the budget, up to 15 percent is used for bonuses and the remaining (except for that obtained in compensation for additional outlays for producing these goods) is put into the production development and social-cultural measures and housing construction funds and into association and enterprise reserves. Resources obtained from these reserves are used to compensate associations and enterprises for losses from price reductions and discounts on goods.

Associations and enterprises specializing in mass consumption goods are given the right to set temporary retail prices for new goods of improved quality, setting markups of up to 15 percent (based upon decisions by artistic-technical councils of associations and enterprises) and up to 20 percent (based upon sector artistic-technical councils). Enterprise, association and sector managers bear personal responsibility for these markups. This also authorizes enterprises and trading organizations to determine contracted retail prices at fairs for highly artistic products. These prices give

consideration to quality and supply and demand (if prices were not previously set in the established manner).

Incidentally, associations and enterprises have been recommended, starting in 1987, to freely sell goods at republic, kray, oblast and interoblast fairs. However, they should previously make all-union, interrepublic (and, for republics without oblasts) interoblast deliveries. Goods not sold at fairs can be sold to any trade enterprise and organization.

Enterprises producing mass consumption goods have the right to independently sell above-plan products, first of all within their oblast, kray and union republic. This also applies to products distributed in a planned manner and manufactured in accordance with contracts (made to fill orders), but which are refused by the purchaser. Goods sold in this manner are counted towards plan fulfillment.

EXPORT PRODUCTS

During the 12th Five-Year Plan the economic prerequisites are being created for considerable expansion in the production of goods for export. Provisions are made to convert export-import operations from orders and commissions to a system of contractual relationships on a cost accounting basis.

When signing economic contracts with foreign trade associations in the USSR Ministry of Foreign Trade, associations, enterprises and organizations have been given the right to independently determine the best conditions for exporting their products in order to obtain the highest foreign exchange earnings. Within the limits of their foreign exchange resources (including loans) they can purchase, either independently or through foreign trade organizations, the needed machinery, equipment, materials and other items for technical modernization and reconstructon of production operations, scientific research, experimental-design and other work.

In order to set up and develop export production operations, USSR Foreign Trade Bank has been authorized to grant associations, enterprises and organizations foreign exchange credits for up to four years. These should be paid off through foreign exchange earnings from the products' export. However, it must be noted that if associations and enterprises fail fo fulfill their obligations or plan targets for exports they bear economic responsibility and must compensate losses through their own foreign exchange resources.

Funds of foreign exchange allocations for financing export-import operations are being set up at associations and enterprises. These funds are formed through allocations, set by stable long term normatives, from finished product sales and earnings from cooperative delivery operations.

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[Article by T. Khachaturov, member of the academy; first paragraph is topic summary]

[Text] Principal Shortcomings in Capital Construction--Planning Capital Investments and Capital Construction--Combining Sectoral and Regional Plans--Improving the Quality of Construction

Capital construction is directed toward creating, expanding and bolstering the productive potential, and raising the people's level of well-being. In the years of Soviet power 3.4 trillion rubles in comparable prices have been invested in the production and nonproduction spheres. This has made it possible to augment the national income, build a mighty industrial sector, mechanize agriculture, develop transportation, enlarge the housing stock, and strengthen the country's defensive capability. The industrial sector has received 35-36 percent of all investments (including an increase in machinebuilding and metal manufacturing from 15 percent in the postwar 5-year planning period to 24 percent in the 11th and in the petroleum industry from 10 to 16 percent, respectively). Investment in agriculture increased from 11 percent in the prewar period to 20 percent in the 10th and 19 percent in the 11th Five-Year Plan, investment in the housing industry from 23.5 percent in the 6th Five-Year Plan to 15 percent in the 11th. In 1985 the annual volume of capital investments (in comparable prices) exceeded 180 billion rubles and has been continuing to grow. Fixed production and nonproduction capital amounted to 2.3 trillion rubles in 1985, and the national wealth rose to 3.5 trillion rubles. The achievements of capital construction have made it possible for the USSR to take second place in the world with respect to the level of economic development and productive potential. They could have been still greater if they had not been held back a number of years by adverse factors which to a considerable extent were subjective in nature. The Communist Party and Soviet Government has been pointing to them repeatedly.

The principal deficiency of capital construction is the disproportion between the volume which has been set and the resources to accomplish it. The main reason for this has been that a larger number of projects were regularly included in construction plans and could be accomplished within the standard period of time allowed and also because the organization of efforts has been

imperfect in all stages--from scientific developments, project planning and economic substantiation to the performance of construction work and attainment of rated capacity when the projects are completed. Consequently, capital investments and physical resources have been squandered over a broad construction front, among an extremely large number of projects. For instance, at the end of the 11th Five-Year Plan there were more than 300,000 production projects alone under construction at the same time. At the same time the number of persons employed in construction and installation work in 1985 was 6.5 million, about 4.5 million of them on production projects. It follows that in the course of the year there were on the average 15 persons per project. This is not enough, especially when we take into account that the share of manual labor is high in the construction sector.

The scattering of capital investments has resulted in an intolerable prolongation of construction time for production enterprises. According to figures of USSR Stroybank, whereas the average allowed construction time is 3-3.5 years, the actual time has been 9 years or even longer in building large enterprises. If we add to these periods the 2 and indeed even 3 years it takes for project planning and the same amount for attainment of rated capacity, then it turns out that by the time the enterprise reaches full capacity it is backward and outdated in its technical level, given the present rates of technical development. "Protracted" construction projects represent a heavy burden on the economy. Unfinished construction and the lag in activation of production projects signify that the resources invested during the period of construction are frozen, i.e., efficiency is lowered, and as a rule the loss increase far faster than the extension of the period of construction. Unfinished construction alone exceeded 118 billion rubles in 1984, or 78 percent of the total annual volume of investment. It is especially substantial for production projects--90 million rubles, which exceeds the annual volume of investment in such projects. It is, of course, necessary to have a certain normal amount of partial capital construction to carry over to the beginning of each year, but it should hardly exceed 30-40 percent of the annual volume of capital investment.

The increase in the cost of almost every completed project over the original estimate is a deficiency of construction that is in part related to the extension of the construction time, but it also has its own independent significance. For example, on large projects the actual cost proved to be 1.5-2-fold higher than the estimated cost, in part because the estimated cost was set too low. And this is done so that at the time of the project's approval by USSR Gosplan or at some other official level it would not be found excessively expensive and so that it might be welcomed for inclusion in the plan. In most cases the cost increase is related to discrepancies in delivery times of materials and equipment.

It also has to be admitted that followup (final) estimates have not been drawn up from the results of construction; they would make it possible to compare in detail the actual construction cost to the original estimated cost (and inevitable additional estimates) and to discover the reasons for the increased cost and the fault of those who are accountable for this.

It was noted at the 27th CPSU Congress that in 4 years of the 11th Five-Year Plan the cost of projects under construction rose 24 percent from the cost originally set, and on a number of major projects the discrepancy was far greater. In spite of the cost increase, the quality of construction is not improving everywhere. Builders quite often explain this situation in terms of the tardy delivery of products or the failure of the products to meet standards, in terms of difficulties in installation because of defects that have been found, and so on. In a number of cases these dislocations and difficulties which are beyond the control of the builders do actually occur, but once again they are to be explained by subjective causes, by the fault of the supplier: in quantitative terms the output of cement, steel, lumber, and glass in our country is greater than in any other country, but often their quality is low, deliveries are late, storage is poor, and there is considerable overconsumption. Along with underdeliveries of equipment, cases are quite frequent in which there are delays in installing and assembling equipment. Cases of uninstalled equipment and spoilage because of poor storage are indicative of this.

Completed projects are accepted by commissions consisting of representatives of various departments. But the decisions on acceptance and evaluation of the work performed do not always reflect the actual quality of the completed project by any means and they turn out to be excessively high (for subjective reasons). This results in an unjustified drop in the efficiency of construction.

These deficiencies and disproportions are apparently explained by the desire to build as many projects as possible. Yet this is an unjustified method, and, as experience has shown, it stands in the way of achieving substantially more in developing the country's production and nonproduction spheres than what is actually being created. How are these shortcomings to be corrected? First of all, there is a need for a resolute improvement of the planning of capital investments and construction and for correction of a number of disproportions in the national economy. The planned volume of capital construction must correspond to the actual need and must be backed up with the necessary resources. The capacities of construction organizations should be accurately determined, and within those limits they would be required to perform work within the allowed period of time. It would be useful to compile passports of construction organizations, to review them every year, and make the necessary corrections.

It is important to the success of installation work that elements of the equipment delivered be of high quality and for the various parts to fit together easily. If this is to be achieved, the enterprise producing the equipment must be accountable for its quality. It would be advisable if the supplier furnished personnel to oversee the installation of equipment. Eliminating the discrepancy between requests for capital construction and actual capabilities for accomplishing it will mean that for a time a number of projects requested will have to be postponed. The number of projects under construction will drop, some of them will be mothballed, but construction time will be shorter on the remaining projects.

The most important projects will be built, funds will be concentrated on those whose completion is near at hand and advisable. As a consequence there will be a drop in the total number of projects under construction, and the construction front will be narrowed. The squandering of capital investments over a large number of projects will be ended, and it must not occur in the future.

Improvement of planning requires that sector plans and regional plans be combined. When they are compiled and as capital construction is carried on, ministries and departments quite often do not take local and regional authorities into account, especially at the lower level. This is incorrect, especially when it goes against the interests of the entire society. The recommendations of local authorities must unfailingly be taken into account; success in the development of production depends to no small degree on the help of those authorities.

In addition to the improvement of planning, there is also a need for further development and application of cost-accounting (khozraschet) measures. Disproportions in planning capital construction are furthered by the fact that the state is allocating capital investments to ministries, departments, associations, and enterprises on the basis of no repayment and no charge. Quite often obtaining investments depends on how well one manages to convince the planning authority of their advisability. It is time to put an end to such practice. In future, except for capital investments in projects of particular importance to the state and to defense, all others must be built with long-term credit or the enterprise's own development fund, which will be built up under the conditions of full cost accounting, i.e., the pay-as-you-go principle. The credits should be repaid to the bank along with interest for using them so that the person obtaining the credit is not anxious to file applications for building unprofitable projects. The advisability of extending credit must be checked and ascertained by the bank in agreement with the planning authority.

Beginning in 1987 the transition is to be made to planning and performance of construction in full conformity with the standard time allowed. Higher interest has to be collected on credits granted for not meeting deadlines (in addition to other administrative measures against those responsible for the delay). Contracts should also be concluded for the delivery of materials and equipment and cost-accounting and administrative measures taken when they are not delivered on time. Creation of a position of installation supervisor would contribute to precise fulfillment of contracts related to deliveries and to earlier startup of equipment. A shortening of construction time greatly increases the economic benefit and makes it possible to start operation of production and nonproduction projects earlier. The funds which are standing idle are reduced, and this increases the efficiency of investments.

Putting order into the course of the construction process, narrowing the front of construction in line with the physical and human resources available, strict performance of delivery contracts, and transition to construction according to coordinated schedules--all of this would make it possible not only to remain within the estimated cost, but even to reduce it and to increase the efficiency of construction. At the same time such cost accounting measures as

paying bonuses out of resources saved for completion of construction ahead of schedule are very important, while on the other it is important that penalties be paid or higher rates of interest on credit when projects go beyond the deadline. Stricter monitoring of the release of completed projects by acceptance commissions must help to improve the quality of construction; they need to be strictly accountable for proper evaluation of the work that has been done, and when there are things which have not been finished, they must refuse acceptance.

Coordination and integration of the process of capital construction in all its stages, the entire cycle, have great importance to correcting these shortcomings; this requires technical-and-economic analysis, which makes it possible to determine the most efficient solutions. The optimum relationship has to be achieved between retooling and reconstruction of existing enterprises on the one hand and their expansion and new construction on the other. New projects should be included in the construction plan only when there has been a full accounting of the capabilities of the existing enterprise, when a fundamentally new process is being introduced, and when it is necessary to use the raw materials from new deposits. Not only should the orientation be toward creating new technology and improved processes, but the upcoming development of production needs to be accompanied by attendant and connected production operations and product consumers. It is intolerable, for example, when at the moment an enterprise reaches full capacity the deposits of raw materials on which the design relied for its operation or the actual capacities of related branches prove to be exhausted. The reason for this is that the stages preceding the startup of the enterprise were delayed.

Attention should especially be turned to underestimation of the installations of social welfare facilities within the entire complex. It is a defective practice to try to complete the production installations and only then undertake to build housing, municipal and consumer services and other social welfare facilities. This "sequence" has the inevitable results that the production capacities which have been built are partially used because they are understaffed and have a high turnover of personnel, and there are difficulties with transportation and supply. Extensive housing construction is taking place in the country, and there is every opportunity to build production projects in an integrated way so as to include housing and the other installations of the nonproduction sphere. There must be an appreciation of the climatic and other features of the locality where construction is taking place.

The stage of scientific work on problems related to the development of production on the basis of retooling and reconstruction or new construction has great importance. This reference is to the creation of new equipment and processes with a substantial reduction in the time required for design, for manufacture of the experimental prototype, for testing, and for production. For the advanced countries with rapid progress in the most up-to-date technology, shorter development and application time is typical. This acceleration requires definite efforts and means overcoming the resistance which quite often encounters everything that is new. One thing is quite obvious--it is time to put an end once and for all to the red tape involved in applying innovations, the really unnecessary obtaining of a countless number of permits, and the

fear of risk on the part of the those on whom the promotion of new recommendations depends, and their desire for a quiet life.

The successful application of new equipment and processes depend in large part on thoroughness in working up project plans for capital construction. The quality of project plans determines for many years the technical level of the new enterprises or those which undergo reconstruction. It is here that a fear of the new is intolerable. It is bad when people want to travel the familiar road without worries and reproduce the old technology. Mere references to the scientific-technical literature--Soviet and foreign--is unconvincing here: what has been published is usually ceasing to be up-to-date and is becoming yesterday's technology. Project planning must be based on the most recent advances of domestic and foreign science and must guarantee higher technical-and-economic indicators with respect to labor productivity, energy consumption, physical inputs, and so on.

In the stage of project planning economic indicators are called upon to give evidence of high production efficiency and its rise from the present level. We have methods which have been tested and calculations of the efficiency of capital investments and production published in the three publications, each an improvement over the previous one, of the "Tipovaya metodika opredeleniya effektivnosti kapitalnykh vlozheniy" [Standard Method of Determining the Efficiency of Capital Investments], a fourth is also being prepared). Total (absolute) and comparative efficiency are determined according to the accepted methods. The former is the ratio of the annual growth of national income for the national economy and sectors to the capital investments bringing about that growth. For subsectors, associations, and enterprises one takes the ratio of the annual growth of net output or profit and again applies it to the corresponding capital investments. Comparative efficiency is calculated in order to select that version of the technical-and-economic features of a project that is adopted on the basis of the indicators of absolute efficiency. That version is recognized as the best which yields the smallest prorated costs or shortest period of time to pay off the difference in capital investments by virtue of the saving on production cost. Economic calculations must confirm the correctness of the project plan that has been drafted. It is very important here to take into account possible changes in efficiency not only over the period of time in question, but in the future as well. Without touching upon other aspects of methods that have been developed for determining efficiency, in particular the proposed calculation of outlays made at different times by means of discounting (they have all been covered in the economics literature and are widely applied by project planning organizations and planning organizations), we should note that examining a project's individual parts and the entire project as a whole is indispensable to determining its quality.

Improving the quality of project planning means eliminating disproportions within an enterprise--between the principal and auxiliary shops, between power plants and processing machines, between the volume and area of the workplace and the parameters of equipment which is to be installed in it. Nor can subsequent modifications of the project plan be allowed, especially in cases of retooling and reconstruction of existing production. It would seem that

representatives of the project planning organization should not in the course of construction and installation work stand aloof from new construction projects or reconstruction projects, but should maintain contact with them all the way to final completion and bear a part of the responsibility for the success of construction. If a high standard has been maintained in project planning and construction and installation work, bringing a new production plant up to rated capacity does not require any lengthy period of time and does not cause particular difficulties. If rated capacity is to be attained as soon as possible and the period of time required reduced to the minimum, the work of achieving this has to begin even before construction has been completed.

Assuming the existence of all the necessary installations, not just for production, but also for nonproduction purposes, the personnel of an enterprise can be formed even before it is officially started up and permission granted to test equipment in those shops where construction and installation work has already been completed (with the help of experienced workers and engineers from other enterprises temporarily sent over). This is also important to proper organization of the production process from the very outset. Expensive up-to-date automated equipment can for all practical purposes operate around the clock with only temporary shutdowns for maintenance and repairs. The personnel should work two or indeed three shifts, or workers whose duty it is to monitor the proper working condition of equipment would be left the third shift.

It is time to put an end to the baneful practice whereby fulfillment of the plan with respect to quantity is considered the main thing even at the expense of quality. Yet it is well known that quantity itself depends on quality. For example, the higher the quality of steel and other materials, the longer and more reliably equipment will operate. This means that it has to be changed less frequently. The higher the quality of coal, assuming there is no admixture of shale, the more electric power will be generated at power stations. The quality of tires is crucial to their life, and consequently fewer of them are needed. That is why the task is to inculcate in workers a respect for product quality, a desire to increase it, and not to confine themselves solely to reports on quantitative overfulfillment of the plan in a short period of time.

If labor productivity is to be raised in capital construction, broader use has to be made of such progressive work methods as the brigade contract and multipurpose and specialized cost-accounting brigades. This requires proper organization of construction work in accordance with the necessary charts of work processes, project plans for the performance of operations and schedules, timely supply of materials, and improvement of procurement and warehouse operations and loading and unloading operations. Another essential factor is optimum use of construction machines and other types of equipment, including power tools, which make it possible to reduce manual labor and to reduce idle time lasting less than one shift. All of this is aimed at full-fledged industrialization of the construction process, which must become a unified process in the erection of projects (from factory-made components, consolidated blocks delivered to construction projects on an integrated basis, and machines and machinery for full mechanization of construction and installation). Prompt delivery and installation of processing equipment are indispensable.

It is possible that in certain cases in the future the contractor on a technical reconstruction project or the construction of a new enterprise would be the machinebuilding enterprise or association manufacturing the equipment. This would demand particular responsibility, since the successful course of production would depend on it first of all. The construction organization would figure as a subcontractor in building the structures and installations where there would be a great deal of work, but it would be technically less complicated. In the course of improving the process of capital construction construction and installation organizations will become larger, unnecessary levels will be eliminated, and mobile construction organizations will be introduced to build projects in remote areas.

Retooling and reconstruction of enterprises are aimed at replacing the outdated and obsolescent equipment with up-to-date and progressive equipment. Yet the statistical data indicate a lag in activation of new fixed productive capital, including its active portion. For example, in 1984 only 1.3 percent of fixed productive capital (in value terms) counted at the end of the year and 2.3 percent of the active portion of assets--machines and equipment--were retired. Given such a negligible scale of renewal, complete replacement of all assets would take 77 years, and the time required for machines and equipment would be 44 years. There is a large volume of repair work, so that a large number of workers and a great deal of equipment have to be allocated to do it. All of this is having an adverse effect throughout the entire economy. The stock of metal-cutting machine tools numbers several million, and a substantial proportion is used not in the principal production operation, but in auxiliary operations, including repair work. It is well known that following a major overhaul the output of equipment is 20-25 percent lower than with new equipment. In the industrial sector in 1984 deductions solely for major repairs amounted to 21 billion rubles, not counting substantial outlays for medium-sized and current repairs. If this problem is to be solved, then, there has to be a substantial acceleration of the renewal of equipment, and major overhauls, whose cost during the service life of equipment is growing, reaching the value of new equipment and exceeding it many times over, should possibly be abandoned.

In the very near future the annual retirement of outdated equipment will increase to 5-6 percent, i.e., 2.5-fold over the 11th Five-Year Plan. This requires a substantial development of machinebuilding, whose output will increase 43 percent in the 12th Five-Year Plan, i.e., 1.7-fold more than for the industrial sector as a whole.

By 1990 between 80 and 95 percent of the principal types of products of machinebuilding must meet the world level. Its annual renewal will be 13 percent instead of the 3.1 percent in 1985. There will be a particular increase in the output of improved types of machines and equipment--robots and machining centers, flow lines using conveyors and flexible automated systems, and microprocessors, whose production will increase 2-10-fold. All of this involves a growth of capital investments in the machinebuilding complex (up to 63 billion rubles). About 30 million rubles of this will go for retooling and reconstruction of existing enterprises in machinebuilding. Outdated machines and equipment will be replaced to a greater extent in machinebuilding itself:

from 2.2 percent in 1985 to 9.7 percent in 1990, which will signify a 60-percent renewal of the active portion of the fixed capital of machinebuilding.

This immense scale of capital investment requires a substantial development of capital construction of machinebuilding enterprises--mainly through reconstruction of existing ones.

Reconstruction of enterprises both for machinebuilding itself and also for other sectors, which would be done without shutting down production, requires setting aside for the builders a well-defined area to work in, use of specialized small-sized construction machines and machinery, a high level of organization and corresponding skills on the part of the workers. In the 12th Five-Year Plan a special role is to be played by the in-house method of construction using personnel of the existing enterprise who are very familiar with the production operation and who after the reconstruction project is completed will go back to their jobs.

A saving can be achieved on capital investments through optimum determination of the need for natural resources and in turn the need for development of the extractive industry, to which immense resources are being committed. In future the outlays will increase with exhaustion of resources which are of higher quality and are located closer to industrial centers and as it becomes necessary to move to those which are further away and are of worse quality. That is why the principle of all-out conservation of raw materials and fuel has great importance to increasing production efficiency. In time there will be a rise in specific capital investments for the mining of coal and the production of petroleum and ore, since they will have to be extracted from greater depths and more remote areas. It also takes longer to build extractive enterprises. That is why conservation of raw materials and fuel has great importance to the present and future generations from the standpoint of optimization of natural resource use and conservation of natural raw materials over the longest possible time.

It was noted at the 27th CPSU Congress that the growing needs for fuel, energy, raw materials, and supplies must be met at a level of 75-80 percent through the conservation of those resources. All of this also tends to reduce the need for construction work. The energy intensiveness of the national income will be reduced by a factor of at least 1.4 and metals intensiveness will be cut almost in half. This is no simple task, since up to now electric power production has been at least as fast as the growth of the national income, and metals intensiveness (for steel) has been increasing, although a declining trend has been noted in recent years. By 1990 plans call for saving 200-230 million tons of standard organic fuel and 12-14 million tons of rolled products of ferrous metals over 1985. This will be furthered by the application of new and improved manufacturing processes, elimination of losses, reduction of waste, and the transition to low-waste and waste-free production. It is a question of using larger and more up-to-date units in electric power stations (in the case of fuel and energy), high-pressure boilers, extensive development of heating plants and reduction of numerous small boilers, and so on. In metal-manufacturing and machinebuilding there is a need to displace the backward method of cutting metals, to develop forging and pressing production and

precision casting, and to improve the quality of metals in order to extend the service life of parts.

Plans for the future call for carrying out an extensive production program, which makes it necessary to substantially increase capital investment even during the 12th Five-Year Plan. Whereas their growth was 125 billion rubles in the 11th Five-Year Plan, in the 12th it will increase to 170 billion rubles. Their total volume will reach nearly 1 trillion rubles. Performance of the most important statewide programs will receive 80 percent of the entire growth of capital investments, instead of the 50 percent called for in the 11th Five-Year Plan. Plans call for investing 232 billion rubles in retooling and reconstruction of enterprises.

During the current 5-year planning period an important role is to be played by housing construction; the growth of housing is planned at 595 million m^3 [sic]. The physical facilities for social and cultural services will undergo substantial development in accordance with the task that has been set of creating the necessary conditions for a further rise in the well-being of the population and its cultural level. The acceleration of capital construction and improvement of its quality must become an important component of the radical restructuring of the entire national economy being carried out in accordance with the instructions of the party.

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NEW DECREES ON COOPERATIVES, PUBLIC CATERING, GOODS

Moscow EKONOMICHESKAYA GAZETA in Russian No 9, Feb 87 pp 11-14

[Texts of charter decrees on public catering cooperatives, personal services cooperatives and consumer goods cooperatives under "New Official Materials" rubric]

[Text] Charter Decree on the Public Catering Cooperative; approved by USSR Council of Ministers decree.

I. The Aims and Tasks of the Public Catering Cooperative* (footnote *) (referred to hereinafter as "cooperative").

1. A cooperative is an organization of citizens of the USSR banding together voluntarily on the basis of collective labor and self-management in order jointly to carry out work to produce and sell output for public catering.

A cooperative is formed under the trade (or public catering) administration (or department) of the soviet of people's deputies ispolkom by at least three citizens expressing a wish to take part in its activity through their labor.

2. The basic task of a cooperative is to use opportunities and reserves to satisfy more fully consumer demand for public catering services, use additional food resources and also use the labor of unemployed citizens in social production.

II. Membership in a Cooperative and the Rights and Obligations of Cooperative Members.

3. Any citizen of the USSR who has attained the age of 16 and is capable of participating in fulfillment of the tasks assigned to a cooperative may become a member of a cooperative. Those engaged in cooperatives will be mainly members of the public not employed in social production: pensioners, homemakers, students and undergraduates.

Acceptance of cooperative members is done by a general meeting of the members of a cooperative attended by those submitting applications.

4. A cooperative member is obligated as follows:

--to observe the charter and rules for the internal regulation of the cooperative and comply with decisions adopted at general meetings of the cooperative;

--to work conscientiously and to observe labor discipline and master progressive work methods and practices;

--to insure the proper quality of output and a high standard of service and observe sanitation and hygiene standards and rules;

--to participate actively in the management of the cooperative's affairs, safeguard and protect state and cooperative property and not to permit mismanagement or an incorrect attitude toward the public weal.

5. A member of a cooperative has the following rights:

--to obtain work in a cooperative with due consideration of the opportunities available to the cooperative and the skills of the worker;

--to receive wages from the income distributed among the members of the cooperative according to the amount and the quality of work done;

--to submit proposals on improving the activity of the cooperative and eliminating shortcomings in the work of officials, and to elect and be elected to elected posts.

6. A work record will be kept for each member of a cooperative in accordance with the procedure established for workers and employees except in those cases where the main work of a member of a cooperative is a state, cooperative or other public organization (or enterprise).

7. Notice for a member of his intended dismissal from a cooperative should be reviewed within 1 month by a general meeting of the members of the cooperative.

A member of a cooperative is deemed to have left the cooperative from the moment that this is decided at a general meeting.

Settlement of account with a former member of a cooperative is done within 2 days of his departure from the cooperative, taking into account work actually done or time worked according to established rates (or salary) and piece-work rates.

At the end of the business year, not later than 1 month following confirmation of the annual accounts, a former member is paid the share of wages due to him from the cooperative's income distributed according to the results of the business year.

Settlement of account with a former cooperative member who has quit a cooperative for no sound reason or has been expelled from a cooperative

because of gross or systematic violation of labor discipline or of the cooperative charter is done using the same procedure but without payment of the share of wages from the cooperative's income distributed according to the results of the business year.

III. The Production-Economic Activity of the Cooperative.

8. The cooperative carries on production activity to produce and market public catering produce.

9. The cooperative is a corporate body and has an independent budget, and also a seal.

The cooperative maintains moneys in an account, and other accounts with the USSR Gosbank or a savings bank and carries out all cash and accounting operations in accordance with established rules.

The transfer or disbursement of moneys from a cooperative's account is done on the authority of the cooperative chairman or accountant.

10. The cooperative independently draws up and confirms a plan for its production-economic activity and passes this on to the organ of the administration or enterprise (or organization) under which it was set up.

11. In order to fulfill the tasks facing it the cooperative does the following:

--effects the purchase of meat and meat products, potatoes, vegetables, fruits, greenstuffs and other agricultural produce from the public and from kolkhozes and sovkhozes and other agricultural enterprises and in the kolkhoz markets;

--purchases adequate amounts of utensils at state and cooperative trade enterprises, in accordance with a list issued by the ispolkom of the local soviet of people's deputies;

--uses in its own activities motor transportation, premises, equipment and tools belonging to the members of the cooperative with appropriate compensation to the owners for the expenses incurred in their use;

--obtains for its use under established procedure the necessary premises, equipment, machines and objects of material-technical supply, and also acquires the necessary means of small-scale mechanization and objects of material-technical supply from retail trade enterprises and personal services and other organizations on a cash basis;

--obtains long-term and short-term loans from the USSR Gosbank in accordance with established procedure;

--enters into contractual agreements with state, cooperative and other public organizations, and also acts in any other way appropriate to the aims of the activities and tasks set in its charter.

12. The cooperative keeps accounts and statistics in accordance with established procedure and is responsible for their reliability.

13. A cooperative that is unable to carry on its activities on the principles of paying its own way and self-financing is liquidated.

14. Prices for public catering produce made and sold are determined by the cooperative on the basis of its calculations.

IV. Formation and Utilization of Cooperative Assets.

15. The cooperative's assets are formed from income obtained from the production and sale of public catering products, and from other receipts.

16. Income derived by the cooperative from its activities is used to pay for material expenditures, make obligatory payments and deductions, and the payment of income tax. Here, the cooperative makes payments for the use of electric power, gas, water, steam and municipal services in accordance with existing procedure and the amounts of the payments made for these services as established for state trade public catering enterprises.

Income available to the cooperative is used to form a development fund for the cooperative, and also an insurance fund and to pay workers' wages.

17. The insurance fund is earmarked to cover unforeseen expenditures and losses associated with the production and sale of public catering products, and also to pay debts that a cooperative may have when liquidated.

18. If its members so decide at a general meeting, a cooperative may allocate part of its assets to state, cooperative or other public organizations to build production, residential or cultural-and-service projects on a shared basis.

19. The assets and property of a cooperative are liable in the event of obligations for which suit for recovery may be instituted in accordance with the laws of the USSR and the union republics.

V. The Organization of Wages and Labor Discipline.

20. All work in the cooperative is done by its members, and also by workers engaged for work in a cooperative in certain cases under the terms of a labor agreement. Labor legislation is applicable to persons working under the terms of a labor agreement.

21. The duration and routine for the working day in a cooperative, and the procedure for days off, annual and additional leave, minimum labor participation in social production and other matters pertaining to the regulation of the labor of the cooperative members are regulated by the charter and rules for the internal organization of the cooperative.

The cooperative guarantees timely payment of wages due to its members and to persons working under labor agreements, and wages shall be paid out at least once a month.

22. All work in the cooperative is done with due observance of the rules and standards set for safety procedures and the requirements of production sanitation, and sanitation and hygiene requirements.

23. Wages for the labor of cooperative members and persons working in the cooperative under a labor agreement are formed from the assets remaining after the distribution of income in established ways. These assets are used first to pay wages under the terms of labor agreements. The rest are distributed among the members of the cooperative in accordance with the rates (or salaries) and piece-work rates set by the general meeting.

Incentives for members of the cooperative and persons working in the cooperative under labor agreements are offered in accordance with procedure and under conditions determined by the cooperative.

24. A general meeting of the cooperative may impose penalties on guilty parties for violations of labor discipline or the charter or the rules for internal regulation.

The procedure for imposing and exacting penalties is determined by the rules for the cooperative's internal regulation.

Expulsion of members from the cooperative is done by a general meeting of the cooperative as an extreme step against persons who have permitted gross or systematic violations of labor discipline or the charter or rules for the internal regulation of the cooperative.

25. Disputes among members of the cooperative concerning wages (if payments are not made for work done, or payment is not in full, or not within the period set in the cooperative) or redress of injury caused by mutilation or other harm to health, or the death of a wage-earner, and also disputes concerning compensation for harm caused to the cooperative by a member of the cooperative, are considered in accordance with existing legislation with recourse to the courts.

Other disputes among members of the cooperative arising in connection with their activities within the cooperative are considered by the chairman of the cooperative, and, if agreement cannot be reached, by a general meeting. A decision by a general meeting to expel a member from the cooperative may be appealed in the ispolkom of the local soviet of people's deputies, whose decision is final.

VI. Social Security.

26. The members of the cooperative are entitled to state social insurance in accordance with legislative procedure. For this the cooperative contributes appropriate assets to the state social insurance fund in amounts established for workers in state trade and consumer cooperatives.

27. The cooperative pays compensation for material injury sustained by victims for which the cooperative is to blame, including mutilation and other harm to health, and the death of a member of the cooperative in connection with fulfillment of his labor duties, and it also investigates the causes of any accident with the participation of a representative from the appropriate trade union organ, in accordance with legislation covering the settlement of similar issues with regard to workers and employees.

28. The members of a cooperative responsible for harm caused to the cooperative are materially liable in accordance with the procedures and in the amounts established by law for workers and employees.

29. Social and cultural-and-consumer services for members of the cooperative are provided by the organ of the administration or enterprise (or organization) under which the cooperative was set up, by means of offering its members the right to make use of medical facilities, clubs, kindergartens, pioneer camps and other social and cultural facilities.

VII. Management of the Cooperative.

30. Management of the affairs of the cooperative is done on the basis of broad democracy and the active participation of its members in resolving all matters.

The affairs of the cooperative are managed by the general meeting of its members and by the chairman in the intervals between the meetings.

The economic and financial activites of the cooperative are monitored by an auditor elected for a period of up to 2 years.

31. The general meeting of the members of the cooperative is the highest organ of management in the cooperative.

The general meeting does the following: adopts the cooperative charter and any changes or amendments; elects a cooperative chairman and auditor; resolves questions concerning the admission of cooperative members and the expulsion of members; adopts rules for the internal regulation of the cooperative; reviews and confirms the plans for the cooperative; confirms the estimates relating to income and spending, standards for calculation of piece-work rates and the sizes of wages for the members of the cooperative; determines the size of deductions to the cooperative development fund; reviews and confirms expenditures not provided for in the estimates and determines the sources to be used to cover such expenditures; hears the accountability reports of the cooperative chairman and auditor on their activities; confirms the annual accounts for the cooperative; establishes the sizes of deductions into the insurance fund, as agreed with the ispolkom of the local soviet of people's deputies; resolves questions concerning termination of the cooperative's activities.

32. The general meeting of the cooperative members is convened at times established by the meeting itself, but in any event at least twice annually.

A general meeting is called no later than 1 month after the end of the business year to review and confirm the annual accounts.

The general meeting is empowered to resolve questions when a quorum of at least two-thirds of all cooperative members are present.

Decisions at the general meeting are adopted by a simple majority in a vote by show of hands.

Any decision by the general meeting that is at variance with the cooperative charter and existing legislation will be rescinded by the ispolkom of the local soviet of people's deputies.

33. Election of the chairman and auditor for the cooperative is carried out by a show of hands.

34. The cooperative chairman is elected by the general meeting of the cooperative members for a period of up to 2 years.

The cooperative chairman effects day-to-day leadership over the activities of the cooperative, insures compliance with the decisions of the general meeting, represents the cooperative in its relations with state organs and other institutions and organizations, and is responsible for the production-economic activities of the cooperative.

35. The auditor elected by the general meeting is guided by the cooperative charter and existing legislation. The auditor is accountable to the general meeting of the cooperative.

The auditor monitors observance of the cooperative charter, the safekeeping of state and cooperative property, the legality of contracts and economic operations, receipts and outflows of material-technical and monetary assets, the correct type of bookkeeping, accounts and calculations, and the timely and correct review by the chairman and other officials of the cooperative of complaints and statements by members of the cooperative, and also observance of other matters of interest to the cooperative and its members.

The auditor annually carries out at least one audit of the economic-financial activities of the cooperative and periodically checks its economic activity and submits his conclusions concerning the annual accounts of the cooperative. Audit acts are confirmed by the general meeting of the cooperative members.

The auditor has the following rights: to check how correct is the use and safekeeping of material-technical and monetary assets, premises, installations, transport and other property; to demand the necessary documents from officials and members of the cooperative for verification; to submit proposals based on the results of checks and audits for review by the general meeting.

36. The cooperative names one of its members with appropriate qualifications as accountant or hires an accountant for work under a labor agreement.

The cooperative accountant is responsible for and enjoys the rights afforded by existing legislation for chief accountants of associations (or enterprises) and organizations.

The cooperative accountant is subordinate directly to the cooperative chairman. Methodological guidance and monitoring of the work of the cooperative in questions of organizing the account-books, handling the accounts and carrying out financial operations are done by the appropriate services in the organ of the administration or enterprise (or organization) under which the cooperative was set up, and by the local financial organs.

37. A cooperative chairman or auditor who does not enjoy the trust of the members of the cooperative may be recalled ahead of time if so decided by the general meeting.

38. Proceeding from the specific nature and volume of its activity, management of the activity of the cooperative can also be effected using some other procedure at the discretion of the cooperative itself.

VIII. Adoption and Registration of the Cooperative Charter.

39. The charter for the cooperative adopted by a general meeting of the members on the basis of this Charter decree must be registered in the ispolkom of the rayon (or city) soviet of people's deputies. Subsequent changes and additions to the charter are subject to the same procedure.

The registered charter of the cooperative is kept in the cooperative and in the ispolkom of the rayon (or city) soviet of people's deputies.

IX. Terminating the Activities of the Cooperative.

40. The cooperative is liquidated in the event of violations of the law or of the cooperative charter, when there are fewer than three members in the cooperative, and when it becomes impossible for the cooperative to conduct its affairs on the basis of the principles of paying its own way and self-financing, and also in the event of the liquidation of the organ of the administration or enterprise (or organization) under which the cooperative was set up, if within a 2-month period no other organ of an administration or enterprise (or organization) has been found under which the cooperative can carry on its activities.

41. Liquidation of the cooperative is done in accordance with a decision by a general meeting of the cooperative members or by the ispolkom of the rayon (or city) soviet of people's deputies.

The general meeting of the cooperative members that adopts the decision to liquidate the cooperative elects a liquidation commission, while if the cooperative is liquidated by a decision of the ispolkom of the rayon (or city) soviet of people's deputies, the ispolkom names the liquidation commission.

42. After the debts of the liquidated cooperative have been paid according to established procedure, any remaining assets are distributed among the former members of the cooperative in accordance with procedure established by the general meeting. Any premises, installations, machines, equipment or other property used free of charge or rented by the cooperative are returned to its owners in good condition.

43. Any ongoing payments due from the liquidated cooperative in connection with the mutilation or other harm to the health of a worker or in connection with the death of a worker for which the cooperative was at fault are guaranteed by the organ of the administration or enterprise (or organization) under which the cooperative was set up.

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Charter Decree on the Personal Services Cooperative; approved by USSR Council of Ministers decree.

I. The Aims and Tasks of the Personal Services Cooperative* (footnote *) (referred to hereinafter as "cooperative").

1. A cooperative is an organization of citizens of the USSR banding together voluntarily on the basis of collective labor and self-management in order jointly to carry out work in providing personal services for the public.

A cooperative is formed under the administration (or department) of the ispolkom of the local soviets of people's deputies, production associations (or enterprises) and organizations within the system of the union republic ministries of consumer services and other ministries and departments regardless of the nature of their main activities, and also under housing organizations, by at least three citizens expressing a wish to take part in its activity through their labor.

2. The basic task of a cooperative is to use opportunities and reserves to satisfy more fully consumer demand for personal services and to use the labor of unemployed citizens in social production.

II. Membership in a Cooperative and the Rights and Obligations of Cooperative Members.

3. Any citizen of the USSR who has attained the age of 16 and is capable of participating in fulfillment of the tasks assigned to a cooperative may become a member of a cooperative. Those engaged in cooperatives will be mainly members of the public not employed in social production: pensioners, homemakers, students and undergraduates.

Acceptance of cooperative members is done by a general meeting of the members of a cooperative attended by those submitting applications.

4. A cooperative member is obligated as follows:

--to observe the charter and rules for the internal regulation of the cooperative and to comply with decisions adopted at general meetings of the cooperative;

--to work conscientiously and to observe labor discipline and master progressive work methods and practices;

--to insure the proper quality and high standard of services;

--to participate actively in the management of the cooperative's affairs, safeguard and protect state and cooperative property and not to permit mismanagement or an incorrect attitude toward the public weal.

5. A member of a cooperative has the following rights:

--to obtain work in a cooperative with due consideration of the opportunities available to the cooperative and the skills of the worker;

-- to receive wages from the income distributed among the members of the cooperative according to the amount and the quality of work done;

--to submit proposals on improving the activity of the cooperative and eliminating shortcomings in the work of officials, and to elect and be elected to elected posts.

6. A work record will be kept for each member of a cooperative in accordance with the procedure established for workers and employees, except in those cases where the main work of a member of a cooperative is in a state, cooperative or other public organization (or enterprise).

7. Notice for a member of his intended dismissal from a cooperative should be reviewed within 1 month by a general meeting of the members of the cooperative.

A member of a cooperative is deemed to have left the cooperative from the moment that this is decided at a general meeting.

Settlement of accounts with a former member of a cooperative is done within 2 days of his departure from the cooperative, taking into account work actually done or time worked according to established rates (or salary) and piece-work rates.

At the end of the business year, not later than 1 month following confirmation of the annual accounts, a former member is paid the share of wages due to him from the cooperative's income distributed according to the results of the business year.

Settlement of accounts with a former cooperative member who has quit a cooperative for no sound reason or has been expelled from a cooperative because of gross or systematic violation of labor discipline or the

cooperative charter is done using the same procedure but without payment of the share of wages from the cooperative's income distributed according to the results of the business year.

8. The members of a cooperative responsible for harm caused to the cooperative are materially liable in accordance with the procedures and in the amounts established by law for workers and employees.

III. The Production-Economic Activity of the Cooperative.

9. The cooperative is a corporate body and has an independent budget, and also a seal.

The cooperative maintains moneys in accounts, and other accounts with the USSR Gosbank or a savings bank and carries out all cash and accounting operations in accordance with established rules.

The transfer or disbursement of moneys from a cooperative's account is done on the authority of the cooperative chairman or accountant.

10. The cooperative independently draws up and confirms a plan for its production-economic activity and passes this on to the organ of the administration, association (or enterprise) or organization under which it was set up.

11. In order to fulfill the tasks facing it the cooperative does the following:

--sets up in accordance with established procedure production sections, shops, reception points and other production subdivisions in order to offer personal services according to consumer orders;

--organizes work to provide consumer services in line with the rules for personal services existing in the union republics;

--uses in its own activities motor transportation, premises, equipment and tools belonging to members of the cooperative with appropriate compensation to the owners for the expenses incurred in their use;

--obtains for its use under established procedure the necessary premises, equipment and other property relating to fixed capital, and also acquires the production-technical and consumer goods necessary to offer consumer services from retail trade and consumer services organizations and other organizations;

--obtains long-term and short-term loans from the USSR Gosbank in accordance with established procedure;

--enters into contractual agreements with state, cooperative and other public organizations, and also acts in any other way appropriate to the aims of the activities and tasks set in its charter.

12. The cooperative keeps accounts and statistics in accordance with established procedure and is responsible for their reliability.

13. Prices for personal services are determined by the cooperative.

IV. Formation and Utilization of Cooperative Assets.

14. The cooperative's assets are formed from income obtained from the marketing of personal services, and from other receipts.

15. Income derived by the cooperative from its activities is used to pay for material expenditures and to make obligatory payments and deductions, and the payment of income tax. Here, the cooperative makes payments for the use of electric power, gas, water, steam and municipal services in accordance with existing procedure and the amounts of the payments made for these services as established for consumer services enterprises.

Income available to the cooperative is used to form a development fund for the cooperative, and also an insurance fund, and to pay workers' wages.

16. The insurance fund is earmarked to cover unforeseen expenditures and losses associated with the marketing of personal services, and also to pay debts that a cooperative may have when liquidated.

17. If its members so decide at a general meeting, a cooperative may allocate part of its assets to state, cooperative or other public organizations to build production, residential or cultural-and-consumer projects on a shared basis.

18. The assets and property of a cooperative are liable in the event of obligations for which suit for recovery may be instituted in accordance with the laws of the USSR and the union republics.

V. The Organization of Wages and Labor Discipline.

19. All work in the cooperative is done by its members and also by workers engaged for work in a cooperative under the terms of a labor agreement. Individual work may be done by other citizens on a contractual basis. Labor legislation is applicable to persons working under the terms of a labor agreement.

20. The duration and routine for the working day in a cooperative, and the procedure for days off, annual and additional leave, mimimum labor participation in social production and other matters pertaining to the regulation of the labor of the cooperative members are regulated by the charter and the rules for the internal regulation of the cooperative.

The cooperative guarantees timely payment of wages due to its members and to persons working under labor agreements, and wages shall be paid out at least once a month.

21. All work in the cooperative is done with due observance of the rules and standards set for safety procedures and the requirements of production sanitation.

22. Wages for the labor of cooperative members and also for persons working under a labor agreement or doing work on a contractual basis are formed from the assets remaining for this purpose after the distribution of income in established ways. These assets are used first to pay wages to workers who are not members of the cooperative. Remaining sums are distributed among the members of the cooperative in accordance with the rates (or salaries) and piece-work rates set by a general meeting.

Incentives for members of the cooperative and persons working in the cooperative under labor agreements are offered in accordance with procedure and under conditions determined by the cooperative.

23. A general meeting of the cooperative may impose penalties on guilty parties for violations of labor discipline or the charter or the rules for internal regulation.

The procedure for imposing and exacting penalties is determined by the rules for the cooperative's internal regulation.

Expulsion of members from the cooperative is done by a general meeting of the cooperative as an extreme step against persons who have permitted gross or systematic violations of labor discipline or the charter or rules for the internal regulation of the cooperative.

24. Disputes among members of the cooperative concerning wages (if payments are not made for work done, or payment is not in full, or not within the period set in the cooperative) or redress of injury caused by mutilation or other harm to health, or the death of a wage-earner, and also disputes concerning compensation for harm caused to the cooperative by a member of the cooperative, are considered in accordance with existing legislation with recourse to the courts.

Other disputes among members of the cooperative in connection with their activities within the cooperative are considered by the chairman of the cooperative, and, if agreement cannot be reached, by a general meeting. A decision by a general meeting to expel a member from the cooperative may be appealed in the ispolkom of the local soviet of people's deputies, whose decision is final.

VI. Social Security.

25. The members of the cooperative are entitled to state social insurance in accordance with legislative procedure. For this the cooperative contributes appropriate assets to the state social insurance fund in amounts established for workers in municipal services enterprises.

26. The cooperative pays compensation for material injury sustained by victims for which the cooperative is to blame, including mutilation and other harm to

health, and the death of a member of the cooperative in connection with fulfillment of his labor duties, and it also investigates the causes of any accident with the participation of a representative from the appropriate trade union organ, in accordance with legislation covering the resolution of similar issues with regard to workers and employees.

27. Social and cultural-and-consumer services for members of the cooperative are provided by the organ of the administration association (or enterprise) or organization under which the cooperative was set up, by means of offering its members the right to make use of medical facilities, clubs, kindergartens, pioneer camps and other social and cultural facilities.

VII. Management of the Cooperative.

28. Management of the affairs of the cooperative is done on the basis of broad democracy and the active participation of its members in resolving all matters.

The affairs of the cooperative are managed by the general meeting of its members and by the chairman in the intervals between the meetings.

The economic and financial activities of the cooperative are monitored by an auditor elected for a period of up to 2 years.

29. The general meeting of the members of the cooperative is the highest organ of management in the cooperative.

The general meeting does the following: adopts the cooperative charter and any changes or amendements to it; elects a cooperative chairman and auditor (or auditing commission); resolves questions concerning the admission of cooperative members and the expulsion of members; adopts rules for the internal regulation of the cooperative; reviews and confirms the plans for the cooperative; confirms the estimates relating to income and spending, standards for calculation of piece-work rates and the sizes of wages for the members of the cooperative; determines the size of deductions to the cooperative development fund; reviews and confirms expenditures not provided for in the estimates and determines the sources to be used to cover such expenditures; hears the accountability reports of the cooperative chairman and auditor (or auditing commission) on their activities; confirms the annual accounts for the cooperative and the sizes of deductions to the insurance fund, as agreed with the ispolkom of the local soviet of people's deputies; resolves questions concerning termination of the cooperative's activities.

30. The general meeting of the cooperative members is convened at times established by the meeting itself, but in any event at least twice annually.

A general meeting is called no later than 1 month after the end of the business year to review and confirm the annual accounts.

The general meeting is empowered to resolve questions when a quorum of at least two-thirds of all cooperative members are present.

Decisions at the general meeting are adopted by a simple majority in a vote by show of hands.

Any decision by the general meeting that is at variance with the cooperative charter and existing legislation will be rescinded by the ispolkom of the local soviet of people's deputies.

31. Election of the chairman and auditor (or auditing commission) is carried out by a show of hands.

32. The cooperative chairman is elected by a general meeting of the cooperative members for a period of up to 2 years.

The cooperative chairman effects day-to-day leadership over the activities of the cooperative, insures compliance with the decisions of the general meeting, represents the cooperative in its relations with state organs and other institutions and organizations, and is responsible for the production-economic activities of the cooperative.

33. The auditor (or auditing commission) elected by the general meeting is guided by the cooperative charter and existing legislation. The auditor (or auditing commission) is accountable to the general meeting of the cooperative.

The auditor (or auditing commission) monitors observance of the cooperative charter, the safekeeping of state and cooperative property, the legality of contracts and economic operations, receipts and outgoings of material-technical and monetary assets, the correct type of bookkeeping, accounts and calculations, and the timely and correct review by the chairman and other officials of the cooperative of complaints and statements by members of the cooperative, and also observance of other matters of interest to the cooperative and its members.

The auditor (or auditing commission) annually carries out at least one audit of the economic-financial activities of the cooperative and periodically checks its economic activity and submits his (its) conclusions concerning the annual accounts of the cooperative. Audit acts are confirmed by the general meeting of the cooperative members.

The auditor (or auditing commission) has the following rights: to check for the correct use and safekeeping of material-technical and monetary assets, premises, installations, transport and other property; to demand the necessary documents from officials and members of the cooperative for verification; to submit proposals based on the results of checks and audits for review by the general meeting.

34. The cooperative names from among its members those who have appropriate qualifications or hires an accountant for work under a labor agreement.

The cooperative accountant is responsible for and enjoys the rights afforded by existing legislation for chief accountants of associations (or enterprises) and organizations.

The cooperative accountant is subordinate directly to the cooperative chairman. Methodological guidance and monitoring of the work of the cooperative in questions of organizing the account books, handling the accounts and carrying out financial operations are done by the appropriate services in the organ of the administration, association (or enterprise) or organization under which the cooperative was set up, and by the local financial organs.

35. A cooperative chairman or auditor who does not enjoy the trust of the members of the cooperative may be recalled ahead of time if so decided by the general meeting.

36. Proceeding from the specific nature and volume of its activity, management of the activity of the cooperative can also be effected using some other procedure at the discretion of the cooperative itself.

VIII. Adoption and Registration of the Cooperative Charter.

37. The charter for the cooperative adopted by a general meeting of the members on the basis of this Charter decree must be registered in the ispolkom of the rayon (or city) soviet of people's deputies. Subsequent changes and additions to the charter are subject to the same procedure.

The registered charter of the cooperative is kept in the cooperative and in the ispolkom of the rayon (or city) soviet of people's deputies.

IX. Terminating the Activities of the Cooperative.

38. The cooperative is liquidated in the event of violations of the law or of the cooperative charter, when there are fewer than three members in the cooperative, and when it becomes impossible for the cooperative to conduct its affairs on the basis of the principles of paying its own way and self-financing, and also in the event of the liquidation of the organ of the administration, association (or enterprise) or organization under which the cooperative was set up, if within a 2-month period no other organ of an administration or enterprise (or organization) has been found under which the cooperative can carry on its activities.

39. Liquidation of the cooperative is done in accordance with a decision by a general meeting of the cooperative members or by the ispolkom of the rayon (or city) soviet of people's deputies.

The general meeting of the cooperative members that adopts the decision to liquidate the cooperative elects a liquidation commission, while if the cooperative is liquidated by a decision of the ispolkom of the rayon (or city) soviet of people's deputies, the ispolkom names the liquidation commission.

40. After the debts of the liquidated cooperative have been paid according to established procedure, any remaining assets are distributed among the former members of the cooperative in accordance with procedure established by the .pa

general meeting. Any building, premises, machines, equipment or other property used free of charge or rented by the cooperative are returned to its owners in good condition.

41. Any ongoing payments due from the liquidated cooperative in connection with the mutilation or other harm to the health of a worker or in connection with the death of a worker for which the cooperative was at fault are guaranteed by the organ of the administration, association (or enterprise) or organization under which the cooperative was set up.

* * * * *

Charter Decree on the Consumer Goods Cooperative; approved by USSR Council of Ministers decree.

I. The Aims and Tasks of the Consumer Goods Cooperative (footnote *) (referred to hereinafter as "cooperative").

1. A cooperative is an organization of citizens of the USSR banding together voluntarily on the basis of collective labor and self-management in order jointly to produce consumer goods.

A cooperative is formed under an administration (or department) of the ispolkom of the soviet of people's deputies and a production assocation (or enterprise) or organization within the system of the union republics ministries of local industry and other ministries and departments regardless of their main activity, and also within the Tsentrsoyuz system, by at least three citizens expressing a wish to take part in its activity through their labor.

2. The basic task of a cooperative is to use opportunities and reserves to satisfy more fully public demand for consumer goods, and also to make use of the labor of unemployed citizens in social production.

II. Membership in a Cooperative and the Rights and Obligations of Cooperative Members.

3. Any citizen of the USSR who has attained the age of 16 and is capable of participating in fulfillment of the tasks assigned to a cooperative may become a member of a cooperative. Those engaged in cooperatives will be mainly members of the public not employed in social production: pensioners, homemakers, students and undergraduates.

Acceptance of cooperative members is done by a general meeting of the members of a cooperative attended by those submitting applications.

4. A cooperative member is obligated as follows:

--to observe the charter and rules for the internal regulation of the cooperative and comply with decisions adopted at general meetings of the cooperative;

--to work conscientiously and to observe labor discipline and master progressive work methods and practices;

--to insure the proper quality of consumer goods;

--to participate actively in the management of the cooperative's affairs, safeguard and protect state and cooperative property and not to permit mismanagement or an incorrect attitude toward the public weal.

5. A member of a cooperative has the following rights:

--to obtain work in a cooperative with due consideration of the opportunities available to the cooperative and the skills of the worker;

--to receive wages from the income distributed among the members of the cooperative according to the amount and the quality of work done;

--to submit proposals on improving the activity of a cooperative and eliminating shortcomings in the work of officials, and to elect and be elected to elected posts.

6. A work record will be kept for each member of a cooperative in accordance with the procedure established for workers and employees except in those cases where the main work of a member of a cooperative is a state, cooperative or other public organization (or enterprise).

7. Notice for a member of his intended dismissal from a cooperative should be reviewed within 1 month by a general meeting of the members of the cooperative.

A member of a cooperative is deemed to have left the cooperative from the moment that this is decided at a general meeting.

Settlement of accounts with a former member of a cooperative is done within 2 days of his departure from the cooperative, taking into account work actually done or time worked according to established rates (or salary) and piece-work rates.

At the end of the business year, not later than 1 month following confirmation of the annual accounts, a former member is paid the share of wages due to him from the cooperative's income distributed according to the results of the business year.

Settlement of accounts with a former cooperative member who has quit a cooperative for no sound reason or has been expelled from a cooperative because of gross or systematic violation of labor discipline or of the cooperative charter is done using the same procedure but without payment of the share of wages from the cooperative's income distributed according to the results of the business year.

8. The members of a cooperative responsible for harm caused to the cooperative are materially liable in accordance with the procedures and in the amounts established by law for workers and employees.

III. The Production-Economic Activity of the Cooperative.

9. The cooperative is a corporate body and has an independent budget, and also a seal.

The cooperative maintains moneys in accounts, and other accounts with the USSR Gosbank or a savings bank and carries out all cash and accounting operations in accordance with established rules.

The transfer or disbursement of moneys from a cooperative's account is done on the authority of the cooperative chairman or accountant.

10. The cooperative independently draws up and confirms a plan for its production-economic activity and passes this on to the organ of the administration, association (or enterprise) or organization under which it was set up.

11. In order to fulfill the tasks facing it the cooperative does the following:

--uses in its own activities motor transportation, premises, equipment and tools belonging to the members of the cooperative with appropriate compensation to the owners for the expenses incurred in their use;

--obtains for its use under established procedure the necessary buildings, premises, equipment and other property relating to fixed capital, and also acquires raw materials, materials and other production-technical products necessary to produce consumer goods, and these are acquired at retail trade enterprises and other organizations;

--obtains long-term and short-term loans from the USSR Gosbank in accordance with established procedure;

--enters into contractual agreements with state, cooperative and other public organizations, and also acts in any other way appropriate to the aims of the activities and tasks set in its charter.

12. Marketing of goods (products) produced by the cooperative is done according to contractual prices through the network of state and cooperative retail trade enterprises, and also by factory outlets belonging to associations (or enterprises) under which the cooperative was set up.

13. The cooperative keeps account-books and statistics in accordance with established procedure and is responsible for their reliability.

IV. Formation and Utilization of Cooperative Assets.

14. The cooperative's assets are formed from income obtained from the sale of goods (products) produced, and from other receipts.

15. Income derived by the cooperative from its activities is used to pay for material expenditures, make obligatory payments and deductions, and the payment of income tax. Here, the cooperative makes payments for the use of electric power, gas, water, steam and municipal services in accordance with existing procedure and the amounts of the payments made for these services as established for the organ of the department or association (or enterprise) under which the cooperative was set up.

Income available to the cooperative is used to form a development fund for the cooperative, and also an insurance fund and to pay workers' wages.

16. The insurance fund is earmarked to cover unforeseen expenditures and losses associated with the sale of goods, and also to pay debts that a cooperative may have when liquidated.

17. If its members so decide at a general meeting, a cooperative may allocate part of its assets to state, cooperative or other public organizations to build production, residential or cultural-and-consumer projects on a shared basis.

18. The assets and property of a cooperative are liable in the event of obligations for which suit for recovery may be instituted in accordance with the laws of the USSR and the union republics.

The state is not responsible for the obligations of the cooperative.

V. The Organization of Wages and Labor Discipline.

19. All work in the cooperative is done by its members, and also by workers engaged for work in a cooperative in certain cases under the terms of a labor agreement. Labor legislation is applicable to persons working under the terms of a labor agreement.

20. The duration and routine for the working day in a cooperative, and the procedure for days off, annual and additional leave, minimum labor participation in social production and other matters pertaining to the regulation of the labor of the cooperative members are regulated by the charter and rules for the internal regulation of the cooperative.

The cooperative guarantees timely payment of wages due to its members and to persons working under labor agreements, and wages shall be paid out at least once a month.

21. All work in the cooperative is done with due observance of the rules and standards set for safety.

22. Wages for the labor of cooperative members and persons working in the cooperative under a labor agreement are formed from the assets remaining after the distribution of income in established ways. These assets are used first to pay wages under the terms of labor agreements. The rest are distributed among the members of the cooperative in accordance with the rates (or salaries) and piece-work rates set by a general meeting.

Incentives for members of the cooperative and persons working in the cooperative under labor agreements are offered in accordance with procedure and under conditions determined by the cooperative.

23. A general meeting of the cooperative may impose penalties on guilty parties for violations of labor discipline or the charter or the rules for internal regulation.

The procedure for imposing and exacting penalties is determined by the rules for the cooperative's internal regulation.

Expulsion of members from the cooperative is done by a general meeting of the cooperative as an extreme step against persons who have permitted gross or systematic violations of labor discipline or the charter or rules for the internal regulation of the cooperative.

24. Disputes among members of the cooperative concerning wages (if payments are not made for work done, or payment is not in full, or not within the period set in the cooperative) or redress of injury caused by mutilation or other harm to health, or the death of a wage-earner, and also disputes concerning compensation for harm caused to the cooperative by a member of the cooperative, are considered in accordance with existing legislation with recourse to the courts.

Other disputes among members of the cooperative arising in connection with their activities within the cooperative are considered by the chairman of the cooperative, and, if agreement cannot be reached, by a general meeting. A decision by a general meeting to expel a member from the cooperative may be appealed in the ispolkom of the local soviet of people's deputies, whose decision is final.

VI. Social Security.

25. The members of the cooperative are entitled to state social insurance in accordance with legislative procedure. For this the cooperative contributes appropriate assets to the state social insurance fund in amounts established for workers in local industry.

26. The cooperative pays compensation for material injury sustained by victims for which the cooperative is to blame, including mutilation and other harm to health, and the death of a member of the cooperative in connection with fulfillment of his labor duties, and it also investigates the causes of any accident with the participation of a representative from the appropriate trade union organ, in accordance with legislation covering the resolution of similar issues with regard to workers and employees.

27. Social and cultural-and-consumer services for members of the cooperative are provided by the organ of the administration, association (or enterprise) or organization under which the cooperative was set up, by means of offering its members the right to make use of medical facilities, clubs, kindergartens, pioneer camps and other social and cultural facilities.

VII. Management of the Cooperative.

28. Management of the affairs of the cooperative is carried out on the basis of broad democracy and the active participation of its members in resolving all matters.

The affairs of the cooperative are managed by the general meeting of its members and by the chairman in the intervals between the meetings.

The economic and financial activites of the cooperative are monitored by an auditor (or auditing commission) elected for a period of up to 2 years.

29. The general meeting of the members of the cooperative is the highest organ of management in the cooperative.

The general meeting does the following: adopts the cooperative charter and any changes or amendments; elects a cooperative chairman and auditor (or auditing commission); resolves questions concerning the admission of cooperative members and the expulsion of members; adopts rules for the internal regulation of the cooperative; reviews and confirms the plans for the cooperative; confirms the estimates relating to income and spending, standards for calculation of piece-work rates and the sizes of wages for the members of the cooperative; determines the size of deductions to the cooperative development fund; reviews and confirms expenditures not provided for in the estimates and determines the sources to be used to cover such expenditures; hears the accountability reports of the cooperative chairman and auditor (or auditing commission) on their activities; confirms the annual accounts for the cooperative; establishes the sizes of deductions into the insurance fund, as agreed with the ispolkom of the local soviet of people's deputies; resolves questions concerning termination of the cooperative's activities.

30. The general meeting of the cooperative members is convened at times established by the meeting itself, but in any event at least twice annually.

A general meeting is called no later than 1 month after the end of the business year to review and confirm the annual accounts.

The general meeting is empowered to resolve questions when a quorum of at least two-thirds of all cooperative members are present.

Decisions at the general meeting are adopted by a simple majority in a vote by show of hands.

Any decision by the general meeting that is at variance with the cooperative charter and existing legislation will be rescinded by the ispolkom of the local soviet of people's deputies.

31. Election of the chairman and auditor (or auditing commission) for the cooperative is carried out by a show of hands.

32. The cooperative chairman is elected by the general meeting of the cooperative members for a period of up to 2 years.

The cooperative chairman effects day-to-day leadership over the activities of the cooperative, insures compliance with the decisions of the general meeting, represents the cooperative in its relations with state organs and other institutions and organizations, and is responsible for the production-economic activities of the cooperative.

33. The auditor (or auditing commission) elected by the general meeting is guided by the cooperative charter and existing legislation. The auditor (or auditing commission) is accountable to the general meeting of the cooperative.

The auditor (or auditing commission) monitors observance of the cooperative charter, the safekeeping of state and cooperative property, the legality of contracts and economic operations, receipts and outflows of material-technical and monetary assets, the correct type of bookkeeping, accounts and calculations, and the timely and correct review by the chairman and other officials of the cooperative of complaints and statements by members of the cooperative, and also observance of other matters of interest to the cooperative and its members.

The auditor (or auditing commission) annually carries out at least one audit of the economic-financial activities of the cooperative and periodically checks its economic activity and submits his (its) conclusions concerning the annual accounts of the cooperative. Audit acts are confirmed by the general meeting of the cooperative members.

The auditor (or auditing commission) has the following rights: to check for the correct use and safekeeping of material-technical and monetary assets, premises, installations, transport and other property; to demand the necessary documents from officials and members of the cooperative for verification; to submit proposals based on the results of checks and audits for review by the general meeting.

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The registered charter of the cooperative is kept in the cooperative and in the ispolkom of the rayon (or city) soviet of people's deputies.

IX. Terminating the Activities of the Cooperative.

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41. Any ongoing payments due from the liquidated cooperative in connection with the mutilation or other harm to the health of a worker or in connection with the death of a worker for which the cooperative was at fault are guaranteed by the organ of the administration, association (enterprise) or organization under which the cooperative was set up.

STATISTICAL PRODUCTION DATA FOR ENERGY INDUSTRY

Moscow VESTNIK STATISTIKI in Russian No 12, Dec 86 pp 70, 73-75

[Excerpts from tables on wages, production resource consumption in industry]

[Excerpts] II. Average Monthly Monetary Wages of Workers and Personnel, by Sectors of Industry[1]
(Industrial-production personnel) (in rubles)

	1980	1984	1985
Industry as a whole	185.4	204.6	210.6
Mining	267.3	306.9	306.1
Coal extraction	299.1	330.6	341.8
Oil and natural gas extraction	240.6	271.3	295.8
Electrical energy, gas and steam	190.2	204.2	210.0

[1] The data presented will acquaint readers with the statistical materials compiled on the basis of the International Standard Classification of the UNO, in accordance with which, to ensure comparability, countries present information for the UNO statistical publications.

V. Relative Consumption of Material Resources in the Production of Individual Types of Goods

2. Relative Consumption of Boiler-Furnace Fuel

Types of Production	1981	1982	1983	1984	1985
Electrical energy released by electric power plants operating on boiler-furnace fuel, g/kW·hr	327.7	327.8	328.5	327.1	326.3
Thermal energy released by electric power plants and regional boiler houses--total, kg/gigacal	174.0	174.0	174.0	173.4	173.4

[Table continued on following page]

[Table V. 2. cont'd]

Types of Production	1981	1982	1983	1984	1985
Thermal energy released by industrial-production boiler houses, kg/gigacal	172.9	172.3	171.7	172.0	172.0
Refining oil including gas condensate, kg/t	54.3	58.4	54.3	54.8	55.1

3. Relative Consumption of Thermal Energy

Types of Production	1981	1982	1983	1984	1985
Extraction of oil by all methods, including gas condensate, megacal/t	12.4	11.9	11.3	11.4	11.7
Extracting coal, megacal/t	27.6	26.8	26.5	26.6	25.6
By-product coke production, megacal/t, 6% moisture content	226.7	226.4	224.3	223.7	224.9
Refining oil, including gas condensate, megacal/t of raw material	180.3	180.8	181.4	183.8	187.3
Synthetic rubber, megacal/t	29,571	29,145	28,824	28,307	28,354
Chemical fibers and filaments, megacal/t	15,885	15,417	14,942	15,025	14,944
Synthetic ammonia, megacal/t	1,243	1,216	1,113	1,044	992
Synthetic resins and plastics, megacal/t	5,364	5,921	5,739	5,412	5,168
Cellulose, megacal/t	4,285	4,383	4,371	4,401	4,435
Cotton and staple fabric, megacal/1000 m^2	2,447	2,503	2,435	2,468	2,500
Sugar-sand (sugar-beet processing), megacal/t	319	313	315	311	312

4. Relative Consumption of Electrical Energy

Types of Production	1981	1982	1983	1984	1985
Commercial iron ore (including enriching and concentrating production), kW·hrs/t	72.9	74.9	77.4	79.0	82.5
Oxygen, kW·hrs/1000 m^3	495.4	484.7	486.4	491.4	494.6
Electric steel, kW·hrs/t	695.7	698.6	697.8	707.3	723.0
Rolled ferrous metals (including forged pieces made of bars), kW·hrs/t	112.7	113.4	113.3	115.2	115.5

[Table continued on following page]

[Table V. 4. cont'd]

Types of Production	1981	1982	1983	1984	1985
Coal extraction, underground method, kW·hrs/t	45.4	46.7	47.7	49.3	50.3
Oil extraction, all methods, including gas condensate, kW·hrs/t	37.6	39.8	42.7	45.5	50.9
Oil refining, including gas condensate, kW·hrs/t	29.3	29.5	30.6	31.8	33.2
Synthetic ammonia, kW·hrs/t	912.7	898.4	795.5	762.7	720.5
Electrolytic caustic soda, 100%, kW·hrs/t	3,305	3,343	3,338	3,310	3,319
Chemical fibers and filaments, kW·hrs/t	4,425	4,399	4,242	4,203	4,263
Cement, kW·hrs/t	109.8	110.5	110.6	111.5	111.8
Electric traction of railroad trains, kW·hrs/10,000 t-km gross	126.0	126.5	124.3	124.5	124.1

12151
CSO: 1822/079

CONSERVATION EFFORTS

KOSTROMA OBLAST OFFICIALS PUNISHED FOR FUEL SHORTAGE

Moscow IZVESTIYA in Russian 8 Oct 86 p 2

[Unattributed article: "Not Ready for Winter"]

[Text] The Kostroma Oblast People's Control Committee discussed the results from the mass review of implementation of the USSR Council of Ministers Decree: "On Supplying the National Economy and Population with Fuel, Electrical and Thermal Energy in the Fall-Winter Period of 1986/87." The review, conducted jointly with party commissions, raykoms, gorkoms, soviet organs, trade union and Komsomol organizations, showed that enterprises and organizations had serious shortcomings in organizing timely preparations of production facilities, housing and children's institutions for winter. More than half of the 150 enterprises checked during the review had not prepared heating and ventilation systems for the heating season and 1 out of 5 did not have sufficient fuel reserves.

The management of the rural construction kombinat in the Agropromstroy Association had an irresponsible attitude towards preparing the production base for winter work. The heating system here was not pressure tested and not completely insulated, only temporary repairs were made of the heat lines to the training kombinat. In the first half of 1986 the enterprise paid 76,000 rubles in fines for the irrational use of thermal energy.

Serious shortcomings in preparations for winter were revealed at the Shipping Wharf imeni Komsomolskoy Pravdy, and at a number of enterprises and organizations. The Oblast Committee for People's Control stated that results from the review of enterprises' winter preparations were examined at the meetings of five city and rayon people's control committees.

The committee held N. Ivanov, chief of steam power operations at the Shipping Wharf imeni Komsomolskoy Pravda responsible and fined him. The Sverdlovskiy Rayon People's Control Committee was entrusted with examining the low quality of winter preparation work at the Kostromastroy Association's Ferroconcrete Structures plant and the rural construction kombinat and with holding those guilty responsible.

11574
CSO: 1822/067

CONSERVATION EFFORTS

FUEL UTILIZATION SHORTCOMINGS NOTED

Kiev PRAVDA UKRAINY in Russian 16 Dec 86 p 2

[Letters to PRAVDA UKRAINY from A. Mironenko, secretary, Dnepropetrovsk Obkom, Ukrainian Communist Party, and V. Kiyashko, party committee secretary, Dnepropetrovsk Metallurgical Equipment Plant: "In Reply to the Article "Everywhere, Persistently"]

[Text] A. Mironenko:

A meeting of the party committee at the Dnepropetrovsk Metallurgical Equipment Plant examined the reasons for the excessive consumption of fuel and energy resources indicated in the article published on 28 October.

In order to strengthen control over the rational use of fuel and energy resources at the enterprise, permanently operating commissions chaired by the plant's main engineer have been created. Similar commissions led by shop chiefs have been set up at structural subdivisions. They regularly conduct suprise reviews on the utilization of all types of energy and make out reports.

The Krivorozhstal Metallurgical Kombinat has acquired cable equipment, the previous shortage of which had delayed the operational introduction of monitoring systems. This will make it possible to reliably account for electrical energy used by enterprise shops in the fourth quarter.

The party committee at the enterprise is entrusted with more strictly monitoring the economical use of fuel and energy resources.

V. Kiyashko:

A number of measures have been carried out to eliminate shortcomings in the use of fuel and energy resources at the enterprise. Two condenser units have been installed and put into operation, making it possible to save 90,000 kWh of electric power annually and so have 3 robot systems saving 30,000 kWh annually. The introduction of energy saving technology in casting operations reduces the annual consumption of natural gas by 80,000 cubic meters. The introduction of waste heat recovery systems at open hearth furnaces will annually save 3 million cubic meters of natural gas. The insulation of heat

lines has reduced heat losses by 1,200 Gigacalories annually. The heating system at the model shop has been converted from steam to hot water, reducing annual heat use by 700 Gigacalories

CONTROLS IN NIKOLAYEV OBLAST

[Article by A. Kuznetsov, RATAU [Ukrainian Radio and Telegraph Agency] correspondent: "Economize and Count"

[Text] Enterprises and communal-personal service operations in Nikolayev Oblast could operate for days on the natural gas they have saved since the beginning of the year. A responsible attitude towards the "blue fuel" has been helped to a great extent by a precise system of accounting for and controlling consumption introduced at the Nikolayevgaz Association.

Precision instruments have been installed on the boilers of large enterprises. Gas distribution points have been redesigned. Special attention is given to the work of communal-personal services. Remote control devices help in more effectively managing gas flows, stabilizing pressure in networks and providing continuous service to customers.

11574
CSO: 1822/067

CONSERVATION EFFORTS

DECEMBER SNOW TESTS WORKERS, POWER EQUIPMENT

Storm Recovery Work Surveyed

Kiev RABOCHAYA GAZETA in Russian 27 Dec 86 p 3

[Unattributed article: "Winter's Strict Exam"]

[Text] A stern tester, December is testing the quality of preparations for winter work at industrial enterprises, kolkhozes, sovkhozes, municipal operations, communal and energy services. The testing was especially difficult last week, when abundant snow fall began, in some areas it was a half meter deep. The blizzard was accompanied by gusty winds, rains and ice glaze. As a result, on the morning of 24 December, the tensest time, there were electrical outages in 14 oblasts and hundreds of settlements in the republic and there were disruptions in interurban and urban transport.

In order to quickly straighten out the situation, major efforts had to be taken by the Republic Governmental Council on the Struggle Against Natural Phenomena, local party and soviet organs and labor collectives. For example, during the past days off, 3,600 people in Zhdanov worked to clean up ice damage. Residents in other cities and villages in the republic also showed the same degree of organization. This made it possible to completely restore electric power to settlements and get transportation and other services working. The following articles from our correspondents describe this work.

However, it must be stressed that the situation was not completely stabilized. In some places electric power was only temporarily reconnected. The road situation is still alarming, and there are other problems. The fact that measures were not immediately taken everywhere and that some snow plow services were unprepared and suprised is cause for concern.

Everybody must draw the basic conclusions from this first, but,it should be assumed, not last winter storm. If this is done,subsequent storms can be countered by a high degree of organization and there will be no references to objective difficulties and unforeseen circumstances.

Repair Operations in Kharkov Oblast Praised

Kiev RABOCHAYA GAZETA in Russian 27 Dec 86 p 3

[Article by Yu. Kovalenko, RABOCHAYA GAZETA correspondent: "While the Blizzard Continued"]

[Text]--Kharkov Oblast--By the evening of 23 December, slight precipitation, as weather forecasters call it, had turned into a thick snowsheet. The swirling wind piled the snow up everywhere.

Yu. M. Klychkov, the deputy general director of the Kharkovenergo Association and V. V. Zubashenko, the association's chief engineer were at a meeting in Lozovaya. They immediately saw that they could not get back to Kharkov by car, so they ran and hopped on the first train. Alas, it came to a halt a few kilometers from the oblast center. They had to walk the tracks.

It was deep into the night by the time they reached Kharkovenergo, but a window in the huge building was lit -- practically the entire staff for dealing with natural emergencies had gathered when the alarm sounded. The picture was quite gloomy: 170 10 kilowatt lines were dead and 100 substations were out of operation. Snow, piling up on ventilation panels, melted, shorting out electrical equipment and disrupting power supplies. This happened at dozens of settlements, 150 farms and hundreds of animal raising operations. By the morning of the 24th the extent of the violent storm became completely clear.

Cranes, pole hole augers, all-terrain vehicles, telescopic booms, everything needed to erect fallen high voltage towers, was in operation. Dawn had hardly broken when 430 people in vehicles and on foot were pushing through the snow, examining all sections, lines and substations. However, they didn't just find the problem, but, where possible, set to work fixing it.

In Volchanskiy Rayon alone 160 substations were out of order. P. Z. Tishchenko, a senior foreman, and his colleague, V. I. Korzhenko, showed their good management skills here. N. I. Verchenko and V. N. Turas, machinery operators, and A. D. Levchenko, electrical equipment installer, worked with genuine selflessness. It was necessary to open every substation, remove snow, check equipment and repair damage. All this had to be done very quickly. Starting at 2 AM farms began, one after the next, to get power. By 6 PM, the storm damage in the rayon was completely repaired.

In Dvurechanskiy Rayon the central substation went out, leaving all farms and the rayon center itself without service. Neither transformer at the Kolkhoz imeni Shevchenko was working. According to all norms it takes 4 hours to completely service this power equipment and put it back to work. However, after 2 hours the first, and later the second were in operation. G. I. Zolotov, a tractor operator and V. V. Fedyay, an electrical equipment installer, showed real speed. That morning 320 repair brigades were working in various rayons in the oblast, even though the wind continued to howl, interfering with uprighting the towers and attaching the lines.

The high voltage line at the Kolkhoz imeni Zhdanov in Krasnogradskiy Rayon was broken in five places and 7 substations were out of operation. Repairmen had to dig holes, raise 13 meter towers, replace broken insulators and attach lines.

By 5:30 PM all production facilities at the farm were receiving power. People from V. N. Miroshnichenko's brigade worked without dinner, sleep or rest that day. By 6:00 PM the last rayon reported that all power equipment was in operation. Electric lights were turned on and animal farm equipment was operating. The evening milking began.

Vinnitsa Oblast Efforts Criticized

Kiev RABOCHAYA GAZETA in Russian 27 Dec 86 p 3

[Article by V. Palamarchuk, RABOCHAYA GAZETA correspondent: "The Price of Oversights"]

[Text]--Vinnitsa--The first snowfall in Vinnitsa Oblast caused considerable concern among drivers, road and power engineering workers. Speaking figuratively, those who forgot to repair their sleighs last summer were in especially unenviable situations. Above all, this applies to road workers in Zhmerinskiy, Murovano-Kurilovetskiy, Nemirovskiy, Pogrebishchenskiy, Tyvrovskiy and other rayons. The first snow storm showed who had neglected to prepare for winter. This was true in Ilinetskiy Rayon. When the snow began, 2 out of 4 road graders in the rayon road administration were not ready for operation. According to contracts the administration signed with farms and enterprises, more than 30 pieces of machinery should have been clearing roads, but only half of them arrived. Equipment was not sent by the Kolkhoz imeni Lenin, the Avangard, the imeni B. Khmelnitskiy and other farms and organizations. At the Babinskiy Kolkhoz, a bulldozer, which was to plow snow, was broken.

Anti-skid materials had been hauled into the rayon, but were not always put on the roads. For example, vehicles skidded of the roads through Yastrebintsy, Soroki and Leukhi.

The first snowfall in Vinnitska Oblast came during the night. In some rayons they simply waited it out. For example, workers at the Tyvrovskiy Road Repair Section only started cleaning the roads after 10 the next morning.

Workers at the Oblast Motor Vehicle Inspectorate reported that information arriving from rayons unfortunately shows that the roads are still not in the required condition. Local road workers are to blame for this. Workers at the Vinnitsa Road-Operating Section No. 646, the Litinskiy No. 652 and the Kalinovskiy No. 654 are insufficiently concerned about their obligations.

The number of accidents increased. In the village of Voronovitsy, a regularly scheduled bus rolled over on a slippery road. It was only luck that none of its 34 passengers were hurt. After leaving the Oblast center, a bus on the Vinnitsa-Obltubdispanser [Oblast Tourist Dispatcher] line, encountered an icy stretch of road and went into a ditch, injuring one of the passengers. In the village of Ust in Berzhadskiy Rayon, M.Z. Tokovoy, driving his own Moskvich, lost control and collided with an oncoming vehicle. Two passengers in the car perished and the driver was injured.

In December alone in Vinnitsa the snow caused 20 highway accidents killing 3 and injuring 6. Winter extracts a heavy price for neglecting its harsh laws.

CONSERVATION EFFORTS

ALTAY KRAY HOMES SUFFER FROM LACK OF HEAT

Moscow SOVETSKAYA ROSSIYA in Russian 2 Oct 86 p 3

[Article by I. Prilipchenko, chief, Construction Department of ALTAYSKAYA PRAVDA: "Is It Turning Cold in Apartments?"

[Text] Strange as it may seem, power engineering projects are still the largest ones in the kray. These include start-up ones upon which depends the winter readiness of homes and factories.

Last summer an order by the USSR Ministry of Power Engineering and Electrification set the last quarter of 1986 as the final deadline for the introduction of capacity at the Biysk TETs-1, the Barnaul TETs-3, and the TETs at the Altay Tractor Plant. New shops, and enterprises being reconstructed and residences have been connected to the capacity being built. Units of the Ministry have not completed half of this year's work volume.

On first impression, the projects have not lacked attention. V. Skripnikov Main Administration Chief and A. Fuki, chief engineer of this administration have been working for weeks and months at the Biysk TETs-1. S. Sadovskiy, first deputy minister, repeatedly visited the site. However, one thing is clear: when managers are present, the work heats up, but when they leave, the pace slackens. However, don't ascribe this to the Ministry's representitives in Biysk! Wouldn't it be better if they imparted their organizational experience to subordinates. However, senior officials do not show the slightest inclination to do this. It is noticed at the site that they frequently solve specific questions in the assignment of labor and resources, making the round of local specialists, vexingly allowing no appeal in their discussions with them. Some local managers are starting to adopt this "experience". People are getting nervous and conflicts are arising at the site. B. Aistov, manager of the Altayenergostroy [Altay Power Engineering Construction] Trust, was at odds with V. Khaustov, leader of the Biysk TETs Construction Administration and unceremoniously replaced him. The latter also showed his character. He was fined and then asked to leave. The Party Gorkom had to conduct a sober meeting and remind people of their responsibility for completing the heat supply program.

It had been planned to complete the plan by the end of the year, but suddenly cement deliveries were stopped. The next major work, which was scheduled for

only 2-3 days, took a week. Then there was cement! It even arrived in excessive amounts. However, M. Kosinov, manager of the Kuzbassenergostroy Trust, showed signs of departmental arbitrariness after the Biysk TETs transferred him to a newly created trust, in spite of his objections. He preferred to "retain" the cement, bricks, lumber and metal intended for the Altay project.

It is quite obvious that measures for accelerating construction at the Biysk TETs are not strengthened by the needed organizational work. Deadlines and work are disrupted and shifted. The situation is similar at the TETs in Zarinsk. Only 75 percent of the work intended has been done at the Altay Tractor Plant. There are also great doubts about the introduction of a turbogenerator at the TETs-3 in Barnaul.

Judging from everything, the cooled down work at power engineering projects is again causing apartments to turn cold.

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WORK POSITION CERTIFICATION PROBLEMS ANALYZED

Shortcomings in Certification

Moscow SOTSIALISTICHESKIY TRUD in Russian No 12, Dec 86 pp 60-64

[Article by O. Babanin, chief of a sector at the Department of Organization, Norm Setting, and Productivity of Labor at the USSR State Committee for Labor and Social Problems: "Urgent Problems of Overall Production Evaluation"]

[Text] The certification and streamlining of work positions carried out in accordance with the decree of the USSR Council of Ministers and the AUCCTU "On Extensive Certification of Work Positions and Their Streamlining in Industry and Other National Economic Sectors" occupy an important place in the set of implemented measures for accelerating scientific and technical progress and mobilizing organizational-economic and social factors in development.

As is well known, the machine-worker ratio, the quality of equipment and technology used by workers, and organizational and social characteristics of the work position are determined in the process of certification. The level of workers' general educational and vocational training and its correspondence to the needs of a specific production facility with due regard for requirements for acceleration of scientific and technical progress are also established. Thus, certification gives a real picture of productive forces formed in the low-level link of public production and, therefore, contributes to the further increase in its efficiency.

Plans have been made to carry out certification and streamlining at all industrial enterprises in 1985-1986 and to complete this work in construction, agriculture, forestry, transport, communication, material and technical supply, domestic services for the public, trade, and public dining next year. The first stage of this program has been virtually concluded and preliminary results can be reviewed.

In industry in 1985 certification encompassed 84 percent of the work positions. A total of 153,000 work positions were withdrawn from production during that period. This is more than one-half of what has been envisaged and approximately 0.9 percent of the total number of work positions in the country's industry. This process proceeded actively at enterprises of the Ministry of Tractor and Agricultural Machine Building, where more than 10,000

positions--1.8 percent of their total number--were eliminated. High results were attained at subdivisions of the Ministry of Instrument Making, Automation Equipment, and Control Systems, the Ministry of the Machine Tool and Tool Building Industry, the USSR Ministry of Light Industry, and the Ministry of Heavy and Transport Machine Building, where recently much attention has been paid to the elimination of shortcomings determined in the course of certification. This gives a significant economic effect.

In key industrial production sectors during a short period, as a result of certification, it was possible to eliminate obsolete work positions, which enabled us to release production areas and cadres of specialists for commissioning 278,000 more advanced, new work positions. An analysis shows that, at the same time, their total number was reduced significantly at enterprises of such ministries as the USSR Ministry of Nonferrous Metallurgy, the Ministry of the Electrical Equipment Industry, the Ministry of Chemical and Petroleum Machine Building, the Ministry of Construction, Road, and Municipal Machine Building, the Ministry of Machine Building for Light and Food Industry and Household Appliances, and so forth. This makes it possible to better utilize production areas and to introduce highly efficient machines, machine tools, flow lines, and technologies instead of those in operation until recently. Thus, the practical solution of the urgent problem "fewer machine tools--more products!" has come to a head. This is the main path for our industry's development.

Overall production evaluation is made in industrial sectors differently and by no means at the same level. Where this matter is approached with great responsibility and creatively, good results are obtained. For example, at Ukrainian SSR enterprises certification encompasses more than 90 percent of the work positions. The efficiency of measures increases continuously. Whereas in 1984, on the average, nine out of 1,000 places submitted for inspection were eliminated, last year it was possible to remove more than 17 work positions from service. At enterprises in Dnepropetrovsk Oblast the results are even higher--16 and 24.6 positions respectively, as compared with nine throughout the country's industry. A great deal has also been done in labor collectives during the current year. Of course, the results will be reflected in the very near future.

A clear picture of the economy of thousands of enterprises was obtained as a result of measures overally implemented at plants, factories, and shops in the RSFSR, Belorussia, Kirghizia, Georgia, Lithuania, and a number of other regions. Measures accelerating labor productivity growth are determined on the basis of the data obtained. This work acquires an ever wide scale, at times giving rise to fundamentally new solutions. For example, utilizing certification results, in Leningrad, Kharkov, Sverdlovsk, and other oblasts enterprises are transferred to a multishift work regime. Social problems concerning the development of labor collectives are solved successfully in Belorussia, Estonia, Kazakhstan, and in some oblasts, krays, and autonomous republics of the RSFSR. The list of such examples is wide.

They show that the campaign launched in the country is a matter of great state importance and serves as a powerful lever making it possible to search for and activate internal resources and, ultimately, increase production efficiency.

The USSR State Committee for Labor and Social Problems jointly with ministries carries out methodological guidance and provides practical help in improving the certification process. Conferences and seminars with key workers at ministries and departments were held in Moscow, Kharkov, Riga, Khabarovsk, Yerevan, Alma-Ata, and other places, positive experience is widely popularized and introduced, and overall inspections of certification are made. On the basis of their results the necessary measures are worked out. An instructive conference with associates of sectorial institutes was held jointly with the All-Union Scientific Medical Center this year. These associates are preparing a statute on certification. Thematic review contests were held at industrial enterprises in Belorussia, Azerbaijan, and Georgia.

Forms and methods of overally inspecting enterprises are being improved continuously. In the new Standard Statute on Certification, Rationalization, Recording, and Planning of Work Positions the number of indicators is reduced and requirements for an evaluation of work positions are increased. Work is closely coordinated with the introduction of new equipment and advanced technology, which lends it indisputable practical significance and directs it at obtaining real final results with an improvement in labor organization.

Assessing properly what has been done, it should, however, be admitted that at many directions and sections certification by no means meets higher requirements. For example, only USSR Gostroy, USSR Gosagroprom, the USSR Ministry of Trade, Gossnab, and the Main Administration of the Mixed Feed Industry have approved new sectorial statutes. Drafts of such documents have been prepared for 15 ministries. The rest have delayed this work. Meanwhile, in 1987 certification has to be carried out according to new statutes.

The fact that in many cases an analysis of the technical and technological level of production is made separately from organizational measures and that opportunities making it possible to better utilize existing capacities and to improve technological processes are not taken into consideration sufficiently greatly lowers the effectiveness of evaluation factors.

Certification has been carried out in many ministries. At industrial enterprises, on the average, 30 percent of the work positions do not meet advanced requirements. In individual sectors these figures are much higher. In the Ministry of Ferrous Metallurgy 42 percent of the work positions will have to be streamlined, in the USSR Ministry of the Timber, Pulp and Paper, and Wood Processing Industry, 40 percent, and in the State Committee for Supply of Production Equipment for Agriculture, 50 percent.

And what is next? It seems that, rolling up our sleeves, we must begin streamlining and renovating production. However, many subdivisions do not rush with this, hoping for something. In fact, only 4.6 percent of the positions--18 percent of what was envisaged on the basis of certification results--were streamlined last year. As we see, the rates are by no means accelerated. If matters continue to proceed in this way, the realization of this program will require more than 5 years. Such results are simply unacceptable today.

Certification serves as the organizational-technical and economic basis for the most rapid retooling of production. It should decisively contribute to the transition of enterprises to the output of the latest products. For the time being, its mobilizing role in this direction is viewed only through a magnifying glass. Let us take the problem of new equipment. Now special attention is paid to it and special requirements are placed on it. After all, one cannot obtain much with dilapidated equipment and obsolete forms of labor organization.

At the same time, it is well known that a considerable part of the equipment newly developed and produced by industry does not meet the requirements for a superior-quality category. For example, 12 new items of the Ministry of Tractor and Agricultural Machine Building, which claimed the State Badge of Quality, were certified only in the first category. Six or seven new items in the Ministry of the Machine Tool and Tool Building Industry and in the Ministry of Chemical and Petroleum Machine Building did not pass the test for scientific and technical maturity. In a number of machine building ministries the situation is even worse. By no means all models transferred to production meet modern requirements. We assume that the most rapid realization of measures for the modernization of industry envisaged in the course of certification will help to more rapidly solve this chronic, but presently so important and urgent, problem.

The fact that at many enterprises and organizations certification was carried out by obsolete methods with a large number of evaluation indicators should be considered a significant shortcoming. It is well known to what this leads: Work positions are evaluated and certified in the presence of serious shortcomings and without an analysis of the technological interconnection of processes at a section, shop, or another production facility. Such measures do not do much good. They make it possible to eliminate the revealed deficiencies and oversights to a minimal degree and have no decisive effect on production intensification.

At a number of positions high certification points do not correspond to the real state of affairs in production. For example, at enterprises of the USSR Ministry of the Coal Industry more than 78 percent of the positions were certified positively. At the same time, however, the proportion of workers engaged in manual labor at these enterprises is one of the highest in industry--42 percent. Should one be surprised that the actual increase in labor productivity in this sector during the 11th Five-Year Plan did not exceed 0.2 percent, while the assignment called for 6.6 percent? There is a similar situation at USSR Gosagroprom food industry enterprises, where 78 percent of the work positions are also considered as corresponding to advanced requirements. However, it has been known for a long time that a great deal of obsolete and unproductive equipment operates here and manual labor is in great demand.

Capital construction. As before, approximately 50 percent of the workers are engaged in heavy manual labor in this sector and in finishing operations this indicator reaches 70 percent. It would seem that during certification it is necessary to make especially high and strict demands and to outline the main directions in the development of the industrial base of construction projects.

Often, however, people act the other way round--a high rating is given to many processes, which long ago should have been removed from the list of those in effect. For example, at industrial enterprises of the USSR Ministry of Construction in the Far East and Transbaykal Regions 84 percent of the work positions are considered suitable. However, in this ministry plans are not fulfilled systematically, there are many rejects, and personnel turnover is higher than in other departments. This year the situation with respect to the commissioning of start-up projects is alarming. It is to be hoped that, when certification is carried out in basic contract organizations of the USSR Ministry of Construction in the Far East and Transbaykal Regions in 1987 and in other ministries of the construction complex during the period of its reconstruction, production renovation problems will be approached with different criteria and with a different degree of responsibility.

At many enterprises openness and a wide participation of workers are not always ensured during certification. Many specialists consider this work a regular campaign and an additional load. Meanwhile, the key to the high efficiency and reliability of the functioning of certification as a system lies precisely in the active participation of workers and specialists. Such work organization is a specific form of practical realization of the USSR Law on Labor Collectives and, first of all, of the provisions concerning a wide enlistment of workers in managing, improving, and increasing the efficiency of production,

Improvement in the norm setting and brigade organization of labor is an important direction in the mobilization of intraproduction resources in the course of certification. Unfortunately, norms are not certified usually. However, how is it possible to increase labor productivity without scientifically substantiated and stepped-up norms? The brigade form remains one of the important factors making it possible to strengthen discipline and order, to increase labor productivity, and to accelerate scientific and technical progress. When this method of work organization is improved, special attention should be given to the introduction of cost accounting. Today this is one of the bottlenecks in industry and in other national economic sectors.

Our country has entered a stage, when the further increase in production should be ensured through a decrease in the material intensiveness of output. This strategic direction in development will predominate not only at the present stage, but also over the long-term period. Therefore, certification with all the forms and methods inherent in it should be oriented toward solving this major general state problem.

Improvement in work time regimes and in equipment operation becomes one of the basic directions in the increase in production efficiency. Following the example of the people of Leningrad, enterprises in many regions now change over to two- and three-shift work. At the same time, they often encounter the problem of personnel shortage. Precisely certification should contribute to the release of skilled workers so that they may actively work during second and third shifts. This is an urgent task. To use modern mechanisms, automatic lines, and expensive equipment during one shift is an inexcusable luxury and antieconomic policy. For the time being, the role of certification

in the solution of these problems is more than modest. It certainly should increase significantly.

A larger-scale, new stage in the certification and streamlining of work positions will begin next year. Its goal is not only to determine the objective picture of the state of fixed capital and the availability and skills of personnel, but also to assist in the improvement in the management of the national economy and to lay a firm foundation for an acceleration of the rates of labor productivity growth during the subsequent years of the five-year plan and over the long-term period.

In connection with the introduction of new wage conditions in the production sectors of the national economy most enterprises plan to carry out a repeated certification of work positions with their own funds in 1987, following the approved standard statute and advanced standards of work positions.

Certification in Construction Industry

Moscow SOTSIALISTICHESKIY TRUD in Russian No 12, Dec 86 pp 64-68

[Article by V. Zavalishin (Central Committee of the Trade Union of Workers in Construction and in the Construction Materials Industry): "The Sector's Resources Are Uncovered"]

[Text] In the construction materials industry during the current five-year plan labor productivity is to be increased by 16 to 18 percent and production costs are to be lowered by 4 to 5 percent. Undoubtedly, this is a difficult, but fully feasible, task. The efforts of 1.2 million workers in the sector are aimed at realizing it.

While every production facility has its own distinctive features, there is a problem common for all: To better manage the economy, to efficiently utilize raw materials and other resources, and, ultimately, to work more effectively and to strive for production intensification. The following demand is fundamental for all collectives: During the current 5-year period to obtain the entire increase in output through a better utilization of the existing and the most rapid mastering of the new production potential. Overall programs and organizational-technical measures have been worked out for this purpose.

The certification and streamlining of work positions are powerful levers in the intensification and accelerated solution of social problems. About 80 percent of the work positions were certified at enterprises and organizations of the USSR Ministry of the Construction Materials Industry. Certification was carried out in the most organized manner, with the enlistment of a wide range of engineering and technical personnel, production innovators, advanced workers, and trade-union aktivists in subdivisions of republic ministries in the Ukraine, Belorussia, Lithuania, and a number of other regions.

First of all, methods of labor organization, planning, and management in low-level collectives are analyzed carefully. During certification the forms of

workers' participation in production processes are determined, the manner of application of the wage system is checked, and mutual relations of workers, brigades, and sections with technical and other enterprise services are analyzed.

The role of certification rises especially in connection with the envisaged increase in the share of funds for reconstruction and retooling. In the next few years these allocations should be increased to 50 percent. It is necessary to develop a reliable tool making it possible to determine how to utilize them most efficiently. At the same time, the role of certification of work positions, as well as of sections and shops, rises. Their overall evaluation is an important condition for an efficient renovation and modernization of the production potential, replacement of obsolete capital with new equipment, and introduction of improved technologies. Capital investments will be allocated primarily for these purposes. In the very near future enterprises should certify individual technological processes and production facilities in the form of an experiment.

It is characteristic that, when work positions are evaluated, a technical certificate is given to every section or service zone and to a machine tool or a unit and measures ensuring the solution of social problems in labor collectives are envisaged. This is how work has been organized in the Belorussian SSR Ministry of the Construction Materials Industry. Working under the new conditions of management and skillfully utilizing cost accounting principles and brigade forms of labor organization and stimulation, collectives at the republic's construction materials industry enterprises fulfill planned assignments for all parameters. More than 22 percent of the products have the State Badge of Quality. This is much higher than the average sectorial indicator. Overall programs for the realization of suggestions made in the course of certification of work positions are worked out here. In many collectives, owing to the introduction of organizational-technical measures, labor productivity will increase by 4 to 5 percent next year.

A great deal has been done to increase production efficiency on the basis of the certification and streamlining of work positions at enterprises of the RSFSR Ministry of the Construction Materials Industry. Suggestions making it possible to improve the condition of work positions and to introduce the achievements of scientific and technical progress were made in collectives of the Mineralovodskiy Glass Plant imeni Andzhiyevskiy, the Moscow Iron Casting Plant imeni Voykov, and other plants. Special attention was paid to reducing manual labor and improving workers' conditions. According to estimates, as a result of the application of technical innovations and realization of social problems, labor productivity will increase by 3 or 4 percent at enterprises and by 6 or 7 percent at a number of sections.

The Urshelskiy Glass Plant of the Vladimirsteklo Industrial Association is one of the subsector's advanced enterprises. Its economic managers and trade-union organizations are constantly concerned about improving labor organization. The plant approached the overall inspection of work positions in the same way, with a measure of great responsibility. First of all, all workers and employees were notified of this. The prospects for the

introduction of technical innovations were discussed at a general meeting, where bottlenecks were revealed. In the process of certification workers made more than 30 suggestions on streamlining production. Most of them are being introduced. Results were not slow in manifesting themselves: More than 90 glass makers were released and the number of work positions decreased by 8 percent. Preliminary results show that the annual economic effect from the improvement in labor organization during the current year will exceed 100,000 rubles.

Certification is the product of collective labor. The practice of the Volgograd Ceramic Plant, where leading specialists, section and shop managers, public organizations, advanced production workers and innovators, and virtually the entire labor collective have been enlisted in the development of measures, convinces us of this. This resulted in a considerable benefit: More than 180 suggestions were made and a set of measures was implemented according to them. The number of heavy physical operations decreased, labor productivity rose, and the equipment of work positions improved. For example, operations performed by the sorter of finished products are the most labor intensive and monotonous. Women are basically employed here. The optimum variant of organization of the work position, including the mechanization, interior, and painting of equipment, layout of the walls of premises, and so forth, was determined with due regard for the specific nature of the work position. With the introduction of automatic stackers 16 people were released in the tile packaging operation.

Workers at the Volgograd Ceramic Plant have something to be proud of. Not long ago they applied automatic schemes with volume-weight feed of mass components at the initial processing department, which made it possible to eliminate the work position of the crusher-grinder and to release four people. In the shop for sanitary ceramic articles and consumer goods the work positions of founders were equipped with special stands, working conditions were improved significantly, and eight people were transferred to other shops.

At the plant much attention is paid to the automation of technological processes. Enterprise specialists in cooperation with the All-Union Scientific Research and Planning-Design Institute for the Automation of Construction Materials Industry Enterprises are working on the problem of full production automation. The unification of all local systems into a single system will make it possible to release four people engaged in the control of technological processes and individual parameters. The first stage of the automated control system--an automatic production regulator based on ARP-1m-2m machines--was mastered. This made it possible to promptly eliminate failures in the technological process, to keep a day-to-day record of idle time, losses, and output, to control the course of operations, and so forth.

We would like to stress especially that, simultaneously with developing and improving basic production, workers at the Volgograd Ceramic Plant try to increase labor productivity in auxiliary shops, that is, construction repair and mechanical repair shops, the shop for control and measuring instruments and automation equipment, the power repair shop, and so forth, through the mechanization of loading-unloading operations, containerization, mastering of a line for cardboard container production, and introduction of more productive

equipment. The Volgograd Ceramic Plant is an advanced enterprise. Many specialists come here for experience. This greatly contributes to the most rapid retooling of other production facilities.

At the Bryansk Silicate Plant certification has been carried out with a preliminary questioning of workers and employees. Both production and social and every-day questions have been included in questionnaires. As a result, more than 200 proposals making it possible to improve labor organization and working conditions and to increase the loading of equipment and machinery have been made in the collective. At the enterprise about 4 percent of the working positions have already been eliminated and working conditions improve steadily. A program for production modernization and for a rise in the level of domestic services for workers and employees is envisaged for the current five-year plan. This is extremely important for enterprises for the output of wall materials.

The Topki Cement Plant in Siberia is an enterprise of a high production standard. In the last 10 years a great deal has been done here to improve the organization of work positions in accordance with requirements for scientific labor organization. However, certification has also helped to uncover additional resources. Strict control over the introduction of technical innovations has been established. Fifteen workers are to be released next year. The economic effect from the utilization of efficient forms and methods of labor will exceed 115,000 rubles. Workers at the Topki Cement Plant do not consider this a limit for themselves and strive to increase labor productivity.

Certification makes it possible to uncover the resources of brigade labor organization and to increase its efficiency. This can be done, establishing large competent brigades and, where production conditions permit, overall technological flows with payment based on final results per single order and with the introduction of full cost accounting.

The collective of the Dushanbe Nonmetallic Materials Plant in the Tajik SSR also followed such a path. Small brigades were consolidated, owing to which equipment service zones were expanded and working conditions improved. For example, 30 suggestions concerning scientific labor organization problems were made in the crushing and sorting shop. More than one-half of them were introduced into production. This year the collective overfulfills planned assignments and labor turnover has decreased by 17 percent. The idle time of equipment has been shortened by almost 10 percent. Training in progressive methods of labor organization has been conducted at the advanced enterprise.

Collectives at the enterprises of the Yakutpromstroymaterialy Production Association work under complex climatic conditions. Improvement in labor organization and in every-day conditions is of special importance for northerners, which has been taken into account during certification. An overall evaluation of the work position was examined in accordance with standard requirements and advanced experience. A total of 113 out of 471 work positions are to be brought up to the standard level in the very near future. Out of these 113 work positions 80 are subject to streamlining, 18 should be optimized, and at 15 obsolete equipment should be replaced. More than 45

major measures for the technical renovation of production are to be realized before 1990. The first positive results are available. The economic effect totaled 26,500 rubles, several workers were released, and job combination is applied at a number of positions. The search for resources is activated. Through the introduction of organizational-technical measures based on certification results alone, labor productivity is to be increased by 6 percent during the current five-year plan.

There are many instructive elements in the work of the Taurage Production Construction Materials Association in the Lithuanian SSR. Labor organization in accordance with requirements for scientific labor organization is traditionally in the forefront here. The association jointly with the Planning and Design Office of the republic's Ministry of the Construction Materials Industry overally solves problems concerning the mechanization of brick and drain pipe molding. Automatic stackers of products on drying cars and feeders of frames for automatic stackers have been developed and other technical innovations are used. This has made it possible to mechanize all operations at the molding section. A great deal is also being done at other shops, especially at the brick production facility. There certification has begun and dozens of efficiency experts and inventors have enlisted in it. Important efficiency proposals are included in the plan for new equipment and organizational-technical measures. Proposals, which do not require big expenditures and special measures, are introduced into production without delay. The workers themselves help enterprise managers in this.

Job combination and the introduction of the brigade form of labor organization are among the measures implemented in the course of certification. Here are only some examples of the efficiency of this activity. Loaders and unloaders of tunnel dryers began to perform the operations of ash dumpers, which made it possible to release three people and to obtain an economic effect of 6,300 rubles. At brick and other production facilities drivers of sided trucks and tractors began to hold the job of loaders. As a result, another six people were transferred to other jobs, an annual economic effect of more than 7,000 rubles was obtained, and the idle time of transport facilities was shortened.

Certification affected not only workers in basic occupations, but also those engaged in auxiliary, repair, and service operations. Labor expenditures were lowered considerably and the economic effect exceeded 1,500 rubles annually. Twelve overall creative brigades work at the Taurage Production Association. An experienced consultant is assigned to each of them. A special group introduces new developments making it possible to improve production. A public design office also functions in the collective. Creative missions and excursions to allied enterprises are organized regularly for an exchange of advanced experience. In turn, people come to the association literally from everywhere to learn new and advanced things.

The construction materials industry is a material and power intensive sector. Naturally, resource saving tasks become some of the most important during the certification of work places. For example, the goal of lowering water consumption for technical needs was set at the Lutsk Cardboard-Ruberoid Plant. Resources were available. On the average, 100 cubic meters of water--70 percent of expensive fresh water and 30 percent of white water--were used for

the manufacture of 1 ton of cardboard. The plant succeeded in lowering fresh water consumption to 30 percent. Sections for the preparation of old paper, wood, and rag pulp now use only white water.

At the plant in Lutsk all six dipping units of the ruberoid shop were transferred to thyristor power transformers. The reliability of equipment operation increased immediately, equipment productivity rose, intrashift idle time was shortened, and the production standard improved. The economic effect totaled 24,000 rubles annually. The efficiency of boiler units and furnace installations is rising and losses of furnace mazut and gas are decreasing.

Such examples are not rare. People's creative activity has increased markedly. Let us take the Belgorod-Dnestrovskiy Experimental Cellular Concrete and Article Plant. In the course of certification the output of panels with an optimum expenditure of reinforcement was mastered there, which ensured metal saving, several reinforcement placers were released, and the labor intensiveness of cage manufacture was lowered. The economic effect totaled 1,200 rubles.

Experience in improving labor organization and the solution of social problems in collectives of the Belgorod Asbestos-Cement Combine, the Kalinin Production Construction Materials Industry Association, the Brest Construction Materials Enterprise, and many others deserves attention.

To be sure, a great deal has been done, but today the possibilities for production intensification in the sector are not yet utilized sufficiently. At times technical measures are realized without the proper consideration of the human factor and without a complete solution of the social problems of collectives. Shortcomings in labor organization and planning in brigades are some of the basic reasons hampering an increase in the rates of labor productivity and an improvement in the quality of output. Often low-level collectives do not know annual and quarterly planned assignments. Norms of expenditure of supplies and raw materials at a number of enterprises are established without the proper substantiation and often are changed and many sections are not provided with monitoring and testing instruments. This lowers workers' interest in implementing a policy of thrift.

As before, insufficient attention is paid to the introduction of cost accounting. For example, about 580 brigades have been established at enterprises of the Kazstenmaterialy Association, but only 10 operate on the basis of cost accounting. This situation is extremely unsatisfactory at a number of plants and production facilities of the Turkmen SSR Ministry of the Construction Materials Industry. Certification was carried out without the proper preparation at enterprises in Tajik, Uzbek, and Azerbaijan republics, at the Main Administration of the Precast Reinforced Concrete Industry, and at a number of other subdivisions. As a consequence, this did not give the proper return.

Certification of work places is a manysided process. Behind it there is the technical equipment of enterprises, planning of expenditures on these purposes, calculations of technically substantiated norms, improvement in the skills of personnel, and other factors. Essentially, this process gives an

objective picture of the state of production and helps to use existing capital investments skillfully and competently and to concentrate engineering thought on the main direction. Therefore, experienced specialists in different services, not secondary people, should do this work.

Certification should envisage primarily the utilization of internal resources and bank credits for the reequipment of plants and form an integral part of the plans of enterprises and organizations and of collective contracts.

Major measures making it possible to renovate and modernize production, to replace obsolete capital with new equipment, and to introduce efficient resource saving technologies were planned at construction materials industry enterprises. An all-around and substantiated overall evaluation of the state of production should serve as an important starting point for this. In the final analysis, it will contribute to a more stable work of labor collectives under the new conditions of management, to which the sector will change over from the beginning of next year.

Certification at Metallurgical Enterprises

Moscow SOTSIALISTICHESKIY TRUD in Russian No 12, Dec 86 pp 69-71

[Article by B. Kustov, director of the West Siberian Metallurgical Combine imeni 50-Letiya Oktyabra, and A. Muratov, candidate of economic sciences: "By the Method of Trial and Error"]

[Text] It has been estimated that the saving per ruble of expenditures on scientific labor organization gives an effect of 3.57 rubles in industry and of almost 6 rubles in construction. It would seem that in such a situation the green light is ensured for the certification and streamlining of work positions and that, owing to the introduction of large-scale measures, collectives expect to obtain a high economic effect in the future. This is in theory. In practice, however, everything often is different.

If to judge from the experience of the West Siberian Metallurgical Combine and the Kuznetsk Metallurgical Combine imeni V. I. Lenin, the first steps in the certification of work positions at Siberian metallurgical enterprises was not very effective. Such a situation was also created at other enterprises in Novokuznetsk, where out of the 42,500 work positions subject to certification only 320 and 270 square meters of production area were released last year. For the sake of comparison: 167 work positions, 146 people, 162 equipment units, and 744 square meters of production area were annually released at the Dnepropetrovsk Combine Plant imeni K. Ye. Voroshilov during the initial certification period. And this at an enterprise with 3,000 work positions!

The following question arises: Why did certification not justify the expectations at plants in our city? It was carried out without the proper methodological support by the USSR Ministry of Ferrous Metallurgy. The ministry's directives, which we followed without fail, basically copied the developments by combine builders and did not reflect sectorial specificity.

The Dnepropetrovsk Combine Plant, like virtually all machine building, has its own characteristics: a low shift coefficient of equipment operation, an excess of the number of machine tools installed in shops over the shift disposition staff, and a shortage of production areas. Under such conditions the number of released machine tools quite fully reflects final results and the efficiency of certification of work positions.

However, metallurgical enterprises are another matter. Expensive machines of a big unit capacity operate here. They operate round the clock and are serviced by brigades. It is difficult to convince the metallurgist that the certification of work positions serves his interests if its results are evaluated by such indicators as "work positions eliminated," "people released," "equipment units dismantled," and so forth, behind which concern for man is not even visible. After all, working conditions in ferrous metallurgy are more difficult than in machine building.

The ministry's provisional methodological directives state that an increase in production efficiency on the basis of labor productivity growth and of a better utilization of fixed capital and material and labor resources, as well as an increase in labor safety, is the main goal of certification of work positions. Everything is correct. But then why not to choose other criteria and not to evaluate final results through a "reduction in production costs per ton of output," "labor productivity growth," "reduction in the share of manual labor," "decrease in injuries," and "reduction in personnel turnover." The ministry did not give proper thought to this. It turned out that the main goal of certification was replaced by a method of attaining it justified under the conditions of a machine building enterprise, but not suitable for metallurgy.

The fact that often the activity of certification commissions was evaluated by the number (percent) of certified work positions also had a negative effect on the efficiency of certification. An analogy with the mechanism of action of the school percent of success suggests itself involuntarily. In order to stop the development of such a tendency, it is necessary to evaluate the work of certification commissions depending on final specific results.

Now about the labor intensiveness of the work done. It is excessive. There are more than 11,000 work positions in West Siberia, each being evaluated according to 16 indicators, including overall ones. Shop chiefs head shop certification commissions. Foremen, technologists, machine operators, power engineers, norm setters, representatives of public organizations, brigade leaders, and advanced workers are included in them. If every such group consisting of eight to ten people spends 1 to 1.5 minutes on an exchange of opinions concerning one indicator, direct work time expenditures on summing up and drawing up documents alone would exceed 5,000 man-days. This is equivalent to the work of a department with more than 20 people during the year. However, there is neither additional staff, nor time, for this and the uncovering of internal resources has not yet become an organic component of the intraplant mechanism of management. With such short periods of certification it is difficult to do without elements of formalism.

At the Dnepropetrovsk Combine Plant certification, as at our enterprises, was not stimulated morally, or financially. However, it was preceded by a long preparation: Order was introduced and the production standard rose. Man was trained in the process and, as a result, every worker now understands the need for the solution of such an important problem. We did not have a preparatory period and the experience of workers at the Dnepropetrovsk Combine Plant, essentially, was popularized in parallel with certification. Hence the insignificant results.

We simply have no right to tolerate this. In order to increase the effectiveness of certification, in West Siberia additional measures were mapped out, the mechanism of management was activated, the efforts of the entire collective of many thousands of people were directed at the realization of immediate tasks, and the human factor was activated. The chief thing was not only to objectively evaluate work positions, but also to streamline them most rapidly.

In order to bring work positions up to the required level, it was necessary to work out about 800 measures, the bulk of which formed part of the plan for the technical-economic and social development of the metallurgical combine for 1986-1990 and of the overall plan for improving working conditions and labor protection and for health-improvement measures. According to certification results the director's orders envisaged measures promoting labor productivity growth through labor organization on a scientific basis. Some measures formed part of the collective contract.

At present the situation is different. A total of 514 out of the previously not certified work positions were evaluated. At the same time, many of them were eliminated and more than 160 people were released. Attention was paid to basic, as well as auxiliary, production facilities. For example, many mechanization facilities were introduced in repair operations. There 29 work positions were eliminated, 64 people were released, and labor was facilitated for 980. Here is the result: As compared with 1984, the share of manual labor in West Siberia decreased by 2 percent.

However, it is early to flatter ourselves. Certification and its consequence--streamlining--are a continuous process unifying a set of technical, organizational, and social production problems. It should organically combine both the technical policy of an enterprise and workers' initiative, that is, become the concern of the entire collective. For the purpose of realizing this multiplane task, a statute on a review contest for the best work on the certification and streamlining of work positions at shops and production facilities has been prepared at the combine. Methodological recommendations are improved systematically.

The collective search uncovered a number of bottlenecks in production. The present system of evaluating the quality of work positions was formed a long time ago and does not reflect the specific nature of management under new conditions, in particular, it does not contain indicators characterizing the possibility of utilizing work positions during the organization of intraproduction and brigade cost accounting. Metallurgists try to closely connect the certification of work positions with an improvement in the form of

labor organization and wages and in norm setting. Plans are also made to take an inventory of fixed capital and to give it a qualitative evaluation. Siberians are preparing for this right now.

In ferrous metallurgy there are many collective work positions. On the basis of our experience, apparently, it is necessary to see to it that their certification develops into an evaluation of technological and production processes at sections, shops, and the entire enterprise. For the time being, however, a picture woven from pieces is obtained. Here and there pieces are missing and, therefore, the picture is not complete. There is no personal responsibility for the significance of every work position. For example, if 75 percent of the work positions are certified at a shop and 60 percent throughout the plant, can it be concluded that the situation at the shop is better? Probably, not, because without an analysis we do not clearly imagine the significance of the remaining 25 percent. It is quite possible that precisely these positions determine the efficiency (inefficiency) of production. The evaluation of the quality of the production process as a single whole can become truly systemic and overall.

Our goal is a permanent process, which has been initiated: The director's order, which makes it obligatory to organize certification and streamlining throughout the technological cycle of the blast furnace, has been issued.

In our opinion, the movement under the slogan "from the certification of work positions to the certification of production processes" can be extremely important. First, an effective lever of acceleration of the sector's retooling appears. Second, the prerequisites for an improvement in the economic mechanism are created.

The experiment in West Siberia could step over the boundaries of the Kuznetsk Basin. Often, however, we do not willingly take up innovations, because insufficient attention is paid to problems of material incentives for collectives, which work better. Obviously, they should also live better, that is, build more housing and be able to spend more funds on social and cultural measures, production development, introduction of automation and mechanization equipment, and so forth. Unfortunately, the presently existing situation leads to the fact that the enterprise collective that has manifested some initiative does not receive the necessary advantages and, moreover, sometimes gets into a difficult situation. This forces it not to fully realize its capabilities and to perceive the achievements existing in the sector in an extremely reluctant manner.

Here is an example: The stability of small converters in West Siberia is more than twice as high as that of similar units at the Metallurgical Combine imeni Ilich and basic technical and economic work indicators are also better. However, all this has been taken into account in the plan. We are given assignments "based on what has been attained," but West Siberians have no benefits or advantages from highly productive labor. This is one of the significant defects in the existing planning system.

If we had efficient sectorial norms, on their basis during the certification of production processes it would have been possible to differentiate them into

several categories and in accordance with this to develop an appropriate system of formation of wage and incentive funds. Its essence lies in the fact that the higher the level of production efficiency (for example, the lower the expenditures per ruble of sold output), the bigger the norms of deductions into appropriate funds. The economic incentive system built in such a way would give scope for an acceleration of scientific and technical progress and could "work" not only in ferrous metallurgy, but also in other national economic sectors. During its realization the leveling approach to the distribution of material benefits between advanced and lagging collectives would lose ground.

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UKRAINIAN CSA OFFICIAL ON ALL-UNION CENSUS PREPARATIONS

Kiev EKONOMIKA SOVETSKOY UKRAINY in Russian No 11, Nov 86 pp 14-21

[Article by A. Troyan, chief of the UkSSR Central Statistical Administration: "On the Path to Social Progress: On the 1989 All-Union Census"]

[Text] A social and economic portrayal of any state begins with a description of the numbers and composition of its population. This is natural, since people, throughout all ages and epochs, have made up society's main productive force. It is they who set up the means of production and put them in motion, and who fix all material and spiritual values.

Population censuses, which are conducted in all countries of the world, are acknowledged as the best-known and most complete sources of information about the population. The number of states regularly conducting censuses has markedly increased in recent years. If censuses were conducted in 151 countries in the first decade after World War II (1945-1954), then in the last ten-year round of censuses (1975-1984), only 19 of the least-developed young liberated states had made no plans to take censuses. However, it is only in the socialist states that census data is used in the interests of all the people for the constant and continued development of the planned economy, to enhance the effectiveness of public production and to rapidly improve the well-being of the workers and the population as a whole.

Six all-union censuses have been conducted in our country during the period of Soviet power. The first was held in August 1920 and was successful thanks only to the personal assistance and special attention given it by Vladimir Ilich Lenin who demanded that the appropriate organizations and institutions render all possible aid in carrying out this important state measure. He wrote, "The business of censuses is not a departmental matter, but is a concernofthe Republic and all Soviet institutions."1 The result wasthat extremely valuable data were obtained and and used in the work of rebuilding the industrial enterprises and transport disrupted by the war, and in carrying out the systematic transition of the country toward building socialist society.

The subsequent censuses of 1926, 1939, 1959, 1970 and 1979 produced the most vital information on the population, the availability of which was rightly considered a requisite condition both for drawing up scientifically

substantiated plans for developing the country's national economy and controlling all areas of public life. The point is that the data on the number, the structure and the distribution of the population forms the basis for determining the manpower resources available to the state and for studying and developing plans for meeting society's material and cultural needs. Thus not a single section of the plan for the overall economic and social development of the country or individual republics, oblasts or rayons can be drawn up without data on the numbers, distribution and composition of the population. In addition, knowledge of the population's family structure is essential to the successful planning of social and economic development, housing construction and municipal utilities services. Information on the level of general and special education of our workers, and the degree of their professional training is needed to make the best use of our manpower resources and to develop various sectors of the national economy, science, art and cultural institutions. Data on the composition by nationality and native language of the country's population makes it possible to plan the publication of national literature, the construction of schools and to prepare personnel to be educated in those countries in their native tongues.

The results of processing census data have been most complete, and in a number of other cases have been the sole source of such information, since only through a census, which is conducted by polling a country's entire population on the same date according to a single program and a single plan, is it possible to find out the exact number and composition of a population, to check the correctness of the current figures and coefficients for birthrate, mortality and the natural growth of the population, or to obtain important information on manpower reserves.

However, the political and national economic value of censuses in this country is not limited to this. As far back as a hundred years ago, at the end of the last century, the great Russian writer L. N. Tolstoy wrote that "to the public, the interest and value of a census lies in the fact that it acts as a mirror which reflects all our society and each of us, whether we want it to or not."2.

A comparative analysis of census data suggests that our people have achieved spectacular successes in developing socialism during the years of Soviet power under the leadership of the Communist Party. The radical changes in the life of our people, in the country's economy and the level of general education and culture, the drawing nearer of mental and physical labor and in the standard of living of the urban and rural population are all examples of these successes.

The period following the 1979 census saw substantial growth in the economic and scientific-technical potential of the country and all the Soviet republics. Within the country's unified national economic complex, the Soviet Ukraine's workers, led by the Communist Party, have continued to make gains in the all-round development of their economy, their science and their culture, have raised the standard of living and have contributed substantially to solving state problems. Thus 1985 saw 1.2-fold more industrial output produced in the UkSSR than in 1979. For the years following the last

population census, the average annual volume of gross agricultural output grew by 8 percent, coming to R47.1 billion.

The extensive program for construction of industrial projects, and residential and cultural and welfare facilities has continued. In 1985 alone, using all financing sources, some R25.1 billion were acquired, which is 16.9 percent above the 1979 level. During the 11th Five-Year Plan period, a total of 136 new major state industrial enterprises were put into operation. A large number of production facilities and capacities were put into operation at already-operating enterprises.

The scope of residential construction underway in our republic and in the country is unrivalled in the world. During the last five-year plan period about 1.7 million apartments, with a total area of 92.3 million m^2 were built in the republic, and about 7.7 million persons improved their living conditions. Right now an average of 934 apartments are put into service every day within the republic, or as much housing is made available approximately every three days as is needed for a city with a population of 9 million.

A great number of general education schools, pre-school institutions, hospitals, out-patient polyclinics and industrial trade educational establishments have been put into operation as well.

As experience teaches us, any change in the numbers and standard of living of the population is inseparably linked with a country's economic and social development. The constant concern of the Communist Party and the state to multiply the national wealth and improve the standard of living of the Soviet people has been helped along in large part by the growth in the Soviet Union's population, which now stands at 278.8 million persons. In our republic, the population has increased from 49.8 million in 1979 to 51 million as of 1 January 1986. There are 5 cities in the Ukraine whose populations number over a million persons and 5 cities with over 500,000 inhabitants each.

Thanks to the fact that socialist society has been set up on a planned basis, the economy's growth rate far exceeds that of the population. This in turn constantly improves the material well-being of every member of society. In 1985 the gross national product of the UkSSR increased by 20 percent compared to 1979, with the population growing by 2.5 percent for this same period. The surpassing of the economic growth rate and the purposeful work to implement the Food Program created the prerequisites for increased production and an increase in the per capita demand for food products. Thus, this period saw the annual demand within the republic for meat and fat increase from 61 to 66 kg, for milk and milk products (in milk equivalent) from 336 to 350 kg, and for eggs, from 232 to 276 units, all of which attests to an improvement in the feeding structure.

As a result of having carried out crucial social measures in recent years, the republic has enjoyed continued growth in real per capita income amounting to a 1.2-fold increase in 1985 compared to 1979. Moreover, the social consumption funds, which play a major role in the lives of all Soviet people, particularly in families with large numbers of children, have grown rapidly. The payments and privileges obtained by the population from the social consumption funds

have increased by over 30 percent, with more than half of their sum total consisting of monetary payments.

Qualitative changes have come about in the manner in which the population uses its aggregate income. Specifically, the proportion of money spent to acquire non-productive goods and to meet cultural and personal needs has increased. In 1985, the per capita demand for woven goods increased compared to 1979 from 32.19 m^2 to 35.55 m^2, and from 3.30 to 3.61 pairs of leather footware.
In the UkSSR, 9 out of 10 families own a television and a refrigerator, and more than half have been provided with sewing machines and washing machines.

People comprise the main productive force. The deeper their knowledge and the greater their experience and know-how, the greater their creative activity and the more effective the processes of improving the national economy through scientific and technical progress. The socialist social structure has created all the conditions necessary for the workers to raise their cultural level and to receive an education and specialized knowledge. Prior to the revolution, according to data from the 1879 census, 72 percent of the population of the Ukraine from the ages of 9 to 49 were illiterate. Some 46 percent of the urban population and 76 percent of the rural population could neither read nor write. The level of literacy among rural males was almost 1.7 times less, and that of rural females 4.2 times less, than for their urban counterparts.

At the very outset of Soviet power, despite the severe conditions of the civil war and foreign intervention, the party carried out a massive effort to eliminate illiteracy. As long ago as the end of 1926 the number of illiterate people had been reduced by almost half, and by the beginning of 1939 only 12 percent of the population between the ages of 9 and 49 remained illiterate. The population censuses of 1959, 1970 and 1979 confirmed that the UkSSR was the republic of universal literacy.

In his address "The New Economic Policy and the Tasks of the Political Education Departments" which was delivered to the 2nd All-Union Congress of Political Education Workers, V. I. Lenin said, "...It is not enough to eliminate illiteracy; the Soviet economy still remains to be built and literacy alone won't take you far. What we need is a tremendous upsurge in culture"[3].

The introduction of general and compulsory secondary education and the reforming of general-educational and trade schools are great achievements of real socialism. The UkSSR today, along with the country as a whole, is not merely a universally literate republic, but a republic with a high educational level. In 1985, the number of persons having higher and secondary (complete and incomplete) educations came to about 30 million people. At present, 699 persons out of every thousand who are 9 years old and older have reached this educational level. In just the 7 years which have elapsedsince the 1979 population census the number of people in this category, calculated per 1,000 residents, increased by 11 percent.

The advances in educational development have helped us to achieve qualitative improvements in the cultural and technical level of the Soviet people and in

our workers' occupational skill structure. Among the republic's employed population as of 1 January 1986, 894 out of every 1,000 employed had higher and secondary (complete and incomplete) educations, which surpasses the 1979 level by 10 percent. At present in the Ukraine, the multimillion-membered army of highly-skilled workers, kolkhoz farmers and members of the intelligentsia are successfully implementing the grand plans for the social development of Soviet society outlined at the 27th CPSU Congress and the 27th Ukrainian Communist Party Congress.

Nevertheless, our outstanding gains in the development of education do not mean that all the urgent problems in this field have been altogether solved. The CPSU Central Committee's Political Report to the 27th Congress concluded that profound changes in the character of labor, stemming from the scientific and technical revolution, are making newer and greater demands on the educational and occupational training of our people. At the present stage of Soviet society's development, as M. S. Gorbachev pointed out, "We have placed the setting up of a unified system of continuous education on the agenda." The higher educational institutions are responsible for setting up this system, which can only be implemented by decisively restructuring all its work. The methods by which this restructuring will come about have been delineated in the documents of the 27th CPSU Congress and in the CPSU Central Committee plan "Basic Directions for Restructuring the Country's Higher and Secondary Special Education", which was submitted for general discussion.

Ever since the first years of its existence, the Soviet state has conducted a policy of rationally developing the population and creating optimal conditions for its reproduction. Demographic problems have constantly been at the center of attention of the Communist Party and the Soviet Government. However, these problems are becoming particularly pressing now that our country's economy has started out on the path to intensive development, when we are faced with carrying out a new technical reconstruction of the national economy using this as the basis for reorganizing society's material and technical base and when we are faced with finding solutions to a wide range of social problems. It is critical that we implement an effective demographic policy based on a thorough analysis of complete and accurate information on the population. In this situation, the Politburo of the CPSU Central Committee has deemed it advisable to carry out its regular All-Union Population Census in January 1989. The results of this census will allow us to conduct an in-depth analysis of the results of the creative activities of the Soviet people during the 1980's and to set new goals for the current period and for the distant future.

The census materials will also help us implement an effective demographic policy aimed at strengthening the family as the most important cell of socialist society, at creating the best conditions for combining motherhood with the active participation of women in labor and public activities, at improving public care for children and the disabled, at implementing a system of measures for increasing productivity in people's lives and work, at improving their health and bringing about improvements in the provision of cultural and personal amenities for them.

Numerical growth in a population depends directly on concern for the mother and the child. In our country, mother and child care is a state concern.

Motherhood is encouraged in every way, and there is an entire complex of measures which protect our mothers. Pregnant women are granted a leave of 56 calendar days before and 56 days after giving birth. When giving birth to two or more children, and in case of complications, the leave is extended. All working mothers are paid a pregnancy and birth allowance for the period of their statutory maternity leave. The amount here is equal to their full wages regardless of the length of time they have spent working.

Industrialization, the growth in the urban population associated with it and the increasing involvement of women in public production have made it necessary to reconcile the social development of the population with the goals of our demographic policy. In accordance with the social program ratified by the 26th Party Congress in 1981, the CPSU Central Committee and the USSR Council of Ministers have adopted the decree "Measures to Increase State Aid to Families With Children" (1981), which provides a system of measures to improve child education, to grant the working woman greater opportunities to combine her work in public production with motherhood, to diminish the differences in the standard of living of families, depending on the number of children and to create conditions for enhancing the lives and customs of our younger families.

For working women, the decree provides partially-paid leave for child care until the children reach the age of one year and, should the mother apply for it, additional leave without pay until the child reaches the age of one and a half. In order to raise the level of state aid given to families, one-time payments of state aid for working mothers or mothers engaged in full-time study has been introduced, amounting to R50 at the time of birth, and R100 at the birth of the second or third child, with the assistance kept at this level following the birth of the fourth and successive children. The level of monthly assistance payments to single mothers has been raised and is paid until the children reach the age of 16 (for those who are studying but not receiving a student grant, this assistance continues until the children reach the age of 18). In the UkSSR in 1985 alone, the sum total of grants provided to mothers for pregnancy, birth and child-care to the age of one year exceeded R500 million. Moreover, more than R45 million in payments were made as childbirth grants.

Legislation now in effect grants every pregnant woman free skilled medical observation for the term of her pregnancy and free in-patient medical assistance during births. The network of maternity homes, maternity consultation centers etc. is constantly growing. In 1985 the republic had over 40,000 hospital and obstetrical beds available for pregnant women and those giving birth, and over 5,000 maternity consultation centers, children's polyclinics and out-patient clinics. Right now, medical aid is available to almost every woman during childbirth.

The state gives a great deal of help to families to educate the rising generation. The country's network of preschool institutions is constantly growing. As mentioned to the 27th CPSU Congress, "In the years ahead, we propose to meet all the population's needs for children's preschools." In the UkSSR in 1985 there were 22,900 preschools, which is 4.5 percent more than in 1979. There are presently more than 2.6 million children regularly attending

kindergartens, day nurseries and creches. It should be borne in mind here that it costs over R600 per child per year for day nursery care, and over R500 for kindergarten care, and that the state pays 80 percent of these outlays.

One well-known factor which complicated the country's economic development at the beginning of the 1980's was slackened growth in manpower resources. This was caused in large part by the negative influence of an unfavorable demographic situation which was caused by a reduced birthrate, in a deformation in the population's sex and age structure, in its low natural growth rate etc. Thus during the 1970's the republic witnessed a constantly slackening birthrate which failed, particularly in the cities, to ensure even a simple reproduction of the population. The fact that the number of the population did not decrease was connected to the positive balance provided by migration, which then played and still plays an important role in forming the republic's manpower resources.

The vigorous demographic policy carried out by the party and the government has also had a positive effect on the demographic situation in the UkSSR, where there has been a definite upswing in the birthrate. In 1983 there were 16 births per 1,000 residents, thus surpassing the 1979 level by 8.8 percent. There was also a substantial upsurge in the natural growth of the population, which grew by 25 percent against the 1979 level. As this occurred, there was also an increase in the birthrate which was primarily due to the birth of second and third children in families. For a number of reasons however, the natural population growth in the UkSSR has slowed down for the last two years. It came to 2.9 births per 1,000 residents in 1985.

As concerns the prospects for the development of society, it is important that the population be constantly reproduced. In this connection, it becomes absolutely crucial that the colossal program outlined by the 27th CPSU Congress be carried out. The program contains a great many measures for conducting an effective demographic program. These measures will be put into effect to a great degree in upcoming years. In particular, the Law "The State Plan for the USSR's Economic and Social Development for 1986-1990" provides for:

--a gradual increase, throughout the rayons of the country, in the length of partially paid time off mothers are granted to care for their children until such children reach the age of 1.5 years, and a simultaneous granting of the right for additional unpaid leave until the children reach the age of two years;

--an increase, from 56 to 70 calendar days, in the time granted for prenatal leave for working women, and an increase of up to 14 days in paid leave to care for ill children

--an increase from 8 to 12 years in the age of children, for whom assistance is paid to badly-off families;

--an increase in the norms for outlays for food in preschool institutions, and the provision of free medicine for children up to 3 years of age;

--the cancellation of the small-family tax on newlyweds for the first year after registration of the wedding.

The results of the upcoming All-Union Population Census will allow us to assess the effectiveness of the measures implemented in accordance with our demographic policy, to develop measures for improving the policy and to make new predictions. As the census proceeds, detailed information will be obtained concerning the stability of the urban and rural family and the number of marriages and divorces. These questions will be studied in tandem with other factors: age, educational level and living conditions. It is common knowledge that at the present time marriage has "gotten younger".

Many children are born in the early years of their mother's married life. The help given to a young family is bolstered by providing them with good living conditions, and the granting of benefits and loans is becoming to an ever greater degree one of the most crucial directions in our demographic policy.

The population census is rightly considered one of the very largest jobs by virtue of its scope and its complex statistical operations. The completion of a census is associated with the solving of a great many methodological and organizational problems and the bringing in of a substantial number of personnel to conduct the census. Such an enormous statistical operation cannot be carried out without thorough preparation according to a previously developed plan.

One of the top priority and most important problems, the solution to which marks the beginning of preparations for the census, is the drawing up of its program, or the list of questions which make up the census list, and the other census forms which are needed for taking responses from the population.

The drawing up of the program is based on the need to have multifaceted data about the population for the analysis of the demographic and social processes and for performing the corresponding tasks engendered by the decisions of CPSU Congresses, CPSU Central Committee Plenums and Central Committee and Soviet Government decrees. As the program is being prepared, the experience from conducting population censuses in the USSR and other countries is taken into account, and the recommendations of the Permanent CEMA Committee and UN statistical and population commissions regarding questions of collaboration in the statistical field, are taken into consideration as well.

In order to have a chance to study the population in a dynamic state, we have to determine the sequence of questions making up the census program. This is why the design for the program for the upcoming census will contain a number of questions asked during the 1979 census as well. However, if those previously questioned had to answer 16 questions, this program design calls for responses to 24 questions. Life itself has dictated the need for this additional information. Thus, the widespread development of the vocational and technical educational network has predetermined the need to find out the number of persons who have graduated from vocational and technical institutions, in which connection the question "Have you completed studies in a vocational and technical educational institution?" has been included in the

census program. The problem of consolidating the family requires particular emphasis on questions about the family situation, the presence of children and the means of livelihood. And here, in contrast to past censuses, in the response concerning the availability of sources for the respondent's means of livelihood, provision has been made for obtaining information on a number of sources. The question about the number of children which have been born has been augmented by a question on the number of living children. In addition, in order to study the process of population migration more deeply, we have used a formulation which allows us to find out whether the respondent has come from an urban or rural population center if he has not in fact resided at his permanent address since birth.

Definite changes have also been made in the way several of the program's questions have been phrased. For example, the traditional notation "Relation to the head of the family." has been changed to "Relation to the family member whose name has been noted first." In view of the total equality of husbands and wives and the absence of economic dependence, the notion of the "head of the family" has lost its initial meaning and has caused problems in families, particularly young families.

The course which the party and the government have taken to radically improve the population's living conditions has required that we carry out a most intent study and stock-taking of these conditions, the result of which has been that for the first time a large group of questions (7) have been made part of the program for a trial census. These questions are meant to ascertain the living conditions and the state of the available housing fund. An evaluation of the need for available housing is assessed on the basis of the obtained data, and a more precise determination is made of the prospects for the planning of construction and the regions where we must first allocate funds for the expansion of residential construction.

The trial census planned for ten of our country's regions from 10 to 17 December of this year will be quite helpful in refining the census program. The Donetsk Oblast's Marinskiy Rayon is one of the chosen rayons. However, the purpose of the trial census is not merely to check the acceptability of the program design of the upcoming 1989 All-Union Population Census and its main methodological and organizational points, but also to test the actual technical process of using a computer to calculate the results derived from the census and the educational level of the labor force under conditions similar to those of conducting a basic census. Here, a large group of leading workers from our statistical agencies, who have not previously participated in performing these large-scale operations, will take part in the census.

The republic's statistical organs are making preparations for the upcoming census everywhere: specifically, lists and borders of urban communities are being precisely defined, block and house numbers and street names are being put in order; schematic plans of urban communities and large villages are being drawn up and refined, as are rayon maps; population records are being checked for correctness and completeness. Future plans call for the drawing up of lists of apartment houses in urban communities, and lists of rural population centers, and for them to be divided into districts for the purposes of the census, i.e., for the territory of each rayon and city to be laid out

into census districts. A great deal of work needs to be done to publish the millions of copies of census documents and to translate them into the national language.

Party, Soviet and economic organizations are giving a great deal of assistance to the workers of the statistical organs in implementing the above measures. The census assistance committees set up in affiliation with the ispolkoms of local soviets of people's deputies are playing a substantial role as well. The oblast assistance committees in the Donetsk, Odessa, Volyn, Kirovograd, Rovno, Nikolayev, Lvov oblasts and in Kiev are already hard at work.

Success in the upcoming census will depend to a considerable degree on how deeply the people of our republic are aware of the goal and its political and national economic significance. Every citizen in our country must be made aware that the upcoming population census is an integral part of the major effort which is being carried out to further strengthen the material and technical base of developed socialism, to accelerate social and economic development so as to successfully fulfill the tasks of the 12th Five-Year Plan. The mass information and agitation media have been called upon to play a major role in this endeavor.

FOOTNOTES

1. V. I.Lenin, "Polnoye Sobraniye Sochineniy" [Complete Works], Vol 51, p 345.

2. L. N. Tolstoy, "Polnoye Sobraniye Sochineniy" [Complete Works], Moscow, Vol 25, p 174.

3. Lenin, op. cit., Vol 44, p 170.

12659
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GENERAL DIRECTOR ON ZIL PRODUCTION ASSOCIATION PROBLEMS

Moscow MOSKOVSKAYA PRAVDA in Russian 31 Dec 86 p 1

[Article by Ye. Brakov, general director of the ZIL [Moscow Motor Vehicle Plant imeni I. A. Likhachev] Production Association, under the rubric "With the Course of Renovation: Motor Vehicle Workers Are Stepping up the Pace": "The Director and Reorganization: The Attitude Toward the Work"]

[Text] Moscow motor vehicle workers are ending the first year of the five-year plan by outstripping the planned growth rates for labor productivity. It has been increased by 4.5 percent, compared with 2.5 percent under the plan. An additional 1,700 trucks, 4,000 home refrigerators, and many spare parts and other items have been provided for the national economy.

We have made the decision to produce a new vehicle model every 5 years and to organize a new model for production every 10 to 12 years. Previously this required from 18 to 24 years. We will be changing the home refrigerator model every 2 years.

A system of substantial supplementary payments and bonuses for engineering and technical workers is being developed. Their salary will now depend on the number of inventions and efficiency proposals adopted and the innovation of equipment introduced, and of course, economic efficiency. A review of the rates will be made in accordance with the labor results for the year.

Managers of all units have been given training in the new systrem of economic management and the opportunities for making use of computer equipment. Studies in accordance with computer aided design systems have been conducted by employees of the Center for a SAPR [computer aided design system] in Machine Building, developed by our specialists jointly with the USSR Academy of Sciences. And of course, the main thing to which we have had to devote steady attention is the attitude of people toward the work with which they have been entrusted. I will say frankly that training often has not been beneficial, a wasted effort, as they say.

What is the reason? It turned out that the workers sent for retraining, especially with leave from work, were those whose absence did not seriously affect the end results of production. To a large extent this was determined by the other side of the coin: the organizers of retraining and the

instructors essentially had no responsibility for the level and quality of the newly acquired knowledge. And as a consequence, having formally "increased his skill" but without having acquired a qualitatively new level of knowledge, a person remained at his previous work place without moving ahead. The entire system of retraining thereby was discredited.

Now we have taken another path. At the plant higher technical school we have opened a 3-year evening economics department for managers with a higher technical education. In addition, a system of certification for supervisory and engineering and technical personnel compels them to increase their skill and takes into account each one's personal contribution in compiling the reserve list for advancement.

Analysis of our managers has shown that they are devoting little attention to the young specialists, the majority of whom have completed the plant's higher technical school. Young persons have not been sufficiently involved in the development and introduction of science-intensive technology, have not been moved up or transferred laterally for a long time, and have been employed in unskilled work. And as a result of such a relationship, up to 30 percent of the young specialists have been leaving the ZIL after the obligatory 3 years.

In order to eliminate this shortcoming, a system has been developed and put into effect in the association for purposeful training of a future engineer in the higher technical school covering the entire period from the first to the last course, and the student's creative path in training and production is reflected in his work certificate. The system stipulates the paths for growth and movement of the young engineer for 3 years after completing the higher technical school and opens broad opportunities for persons with an industrious, vital attitude to reach an important supervisory position at up to 35 years of age.

Our unfinished work in training workers in the plant vocational and technical school was revealed as well. Convinced that the failure to provide the quota of students for the PTU [vocational and technical school] was connected with the old equipment on hand, of little interest for the young worker, we began a readical reorganization of the technical base and organizational structure of the vocational and technical school.

New laboratories provided with modern electronic equipment have been created. A decision has been made to acquire and introduce machine tools with programmed numerical control at the vocational and technical school. Based on creative collaboration with the council of young scientists of the MGU [Moscow State University], new laboratory programs and methods manuals are being developed for the students.

We understand very well that only the first steps have been taken. For radical reorganization of work with personnel, important methodical and theoretical training is necessary, and we have enlisted specialists from Moscow University and the International Scientific Research Institute on Management Problems (MNIIPU) this year for this.

The results of a 4-day large-scale business game conducted at the association's Moscow Carburetor Plant proved to be very instructive for all of us. We "played" for 12 hours a day.

We prepared for this for 4 months. More than 100 specialists took part. During the course of the game, new ways of evaluating the potentials of engineering and technical personnel and middle-level managers were identified. As a result, it became clear that superficial, formal indications of creative activity often distort an evaluation of one specialist or another. Certain "silent ones" made bold and sound decisions when the "talkers" were toned down.

Similar business games are scheduled to be held on larger scales as well. The benefit is substantial, in our opinion.

A new approach also was established in our specialists' decision to remove the obsolete model of the ZIL-133GYa vehicle from production, simultaneously increasing output in 1987 by 4,000 other vehicles and 6,000 refrigerators.

After studying the Leningrad method, the association removed 2,731 units of equipment with low productivity in 1986. An area which is urgently needed for us to develop our own machine tool manufacturing is being made available.

Today we have worked out the basic ways to resolve the problems related to introduction of the new principles of economic operation. Increased responsibility for selecting efficient directions in earning and spending capital is being taken into account. Cost accounting of brigades has become an integral part of the cost accounting system in effect in the association.

About a million rubles annually is being saved in our self-supporting brigades. This is a promising direction in improving cost accounting, the role of which will be increased still further under self-financing conditions.

It is planned to increase the number of workers involved in brigade cost accounting in 1987 by no less than 20 percent. The potential reserves here are extensive.

By attaching much importance to the brigade forms of labor organization as one of the forms of production management, we are putting into practice an elective process not only for brigade leaders but foremen as well. In selecting middle-level managers, discussion of new assignments is conducted jointly with the party bureau and other public organizations of subunits. The time is not far off when we will begin an election process for other management positions as well.

I would not want MOSKOVSKAYA PRAVDA readers to get the impression that everything is excellent at the ZIL, and everything is going smoothly, without obstacles. This is far from the case! An attempt to break through to new heights is still not a breakthrough.

What is hindering us in the fundamental reorganization? Plans and targets for the five-year plan to replace fixed capital with uncoordinated and unbalanced resources, and lagging by our construction workers and suppliers of materials, equipment and accessories behind the best world achievements in the periods of time spent and in quality.

Well, tell us what kind of work is under way in a shop with a three-shift schedule if the actual time that the "Tsiklon" robot is in full operation is 4 to 6 hours? The robots became suitable for operation under a two-shift schedule only after a year of finishing work on the control system and mechanism through the vehicle workers' own efforts.

Over the last 2 weeks in November, 17 domestic machine tools with ChPU [programmed numerical control] were idle for 172 hours because of control system breakdowns. The new equipment has been called upon to economize labor, but it requires additional maintenance because of its poor quality.

Mass introduction of automated work places for the designer, technologist and economist is now essential to achieve tangible efficiency. But there are only 17 such work places in the entire association. We had planned to bring their number up to at least 120 in 1987. Not by any means; this will have to be spread out for the entire five-year plan.

An analysis conducted in our association of the incoming flow of information on innovations, and especially their comparison with actual domestic models at exhibitions, indicates that official sources frequently familiarize themselves with past achievements, not with future ones. There were also unfortunate surprises as a result. Thus, we were sadly surprised to see certain models of equipment at exhibitions which were identical to those we had imported and sometimes even superior to them.

The institutes responsible for providing information to the sectors and disseminating advanced experience in the national economy are primarily at fault for the lack of information on new developments. And there are more than enough such institutes and information centers in Moscow.

I will note self-critically that we also occasionally have an inovation which is introduced in one shop or at one plant which remains a secret from our colleagues for a long time. We have something to think about and to work on here.

Our "overorganization," the petty tutelage of supervisors and creative employees, continues to create serious problems in work with the collective. Despite the national decrees which have been issued, economists and bookkeepers are continuing to work with regulations that have not been rescinded. We will have to formalize and resolve the problems of providing the vocational and technical school and the higher technical school with modern equipment by means of complicated schemes over many months again, for example.

A great many new indicators and limits continue to be sent out. The volume of reporting essentially has not been decreased. And these are all rocks on our path ahead, you know.

The ZIL collective will begin in the first days of the new year to fulfill its socialist pledges so that we can achieve objectives higher than those called for by the five-year plan under the conditions of self-financing.

8936
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IMPROVEMENTS LAG AT YAROSLAVL TIRE PLANT

Moscow EKONOMICHESKAYA GAZETA in Russian No 51, Dec 86 p 15

[Article by EKONOMICHESKAYA GAZETA correspondent V. Varavka: "Prolonged Renovation"]

[Text] The Yaroslavl Tire Plant was built at the same time as the Magnitka, GAZ, ChTZ and Dneproges [Magnitogorsk ferrous metallurgy complex, Gorkiy Motor Vehicle Plant, Chelyabinsk Tractor Plant, and Dnepr Hydroelectric Power Station] at the beginning of the 1930's. Successfully utilizing synthetic rubber in place of critical natural rubber, the enterprise "provided the shoes" for nearly all our motor vehicles, as well as agricultural machinery, for a long time. Through technical improvements and dissemination of the experience of leading workers, the collective managed to exceed the planned capacity and provide the country with a large number of tires above the targets.

However, the technical level of the enterprise has fallen behind today, and very badly. In order to fundamentally change the situation and forge ahead again, modernization of individual types of equipment is not enough; qualitative reorganization based on extensive mechanization, automation, and the application of advanced technology is essential. This decision on renovation of the Yaroslavl Tire Plant was approved as far back as three decades ago. Implementation of the project has been stretched out for almost four five-year plans. At the same time, technical re-equipment has involved only the shop for preparing the rubber stock and certain separate sections.

A new plan for the enterprise's renovation was drafted in 1977-1978, with completion of the first section planned for 1984. It called for putting more durable, composite tires into production. However, because of poor work by the contractor, late arrival of equipment, and other negligence and miscalculations, the complex was not introduced.

Then the Rezinoproyekt [State Institute for Planning Rubber Industry Enterprises] received an urgent directive to thoroughly "replow" the 1980 documentation and to put it on the table in 1985. A new task was set--to complete the first section of the enterprise's renovation by the end of 1989 and to adjust series production of vehicle tire casings entirely for metallic cord.

And just what is the actual status of the plant's "adjusted," "augmented" and "improved" renovation program today?

Firstly, on the technical and economic level of the project and its conformity with the highest domestic and foreign achievements. V. G. Gladilovich, the project's chief engineer, thinks that everything is all right here. The customers have another opinion about this.

"A warehouse for raw material and materiel was built for us in accordance with the Rezinoproyekt designs," said Yu. K. Kozlov, deputy manager of the tire plant. "This is an ordinary 'box' with elevators, without any mechanized facilities and without stackers, and for this reason we have been forced to keep a large number of workers there, especially for unloading railroad cars. Preparation and assembly wing 'A,' where there is a great deal of manual labor in freight handling, is not distinguished by its brilliant engineering concept, either."

According to the plan, the number of production personnel should be reduced by 23 percent after the first section in the renovation is completed. But the absolute figure for the reduction indicated in calculations for the project barely reaches 16.5 percent.

"Yes, there is some confusion here," admits the project's chief engineer.

The planned expenditures per ruble of commodity production have not been reasoned sufficiently either, and are not characterized by the concern for economy so essential in the transition to self-financing. They are being planned at just one-tenth of a kopeck below actual average expenditures. Measures to make use of industrial by-products and protect the air environment have been outlined merely symbolically, although residential blocks are immediately adjacent to the plant.

And how is the current stage of renovation being provided with the equipment needed? L. V. Skokshin, deputy minister of the USSR Ministry of the Petroleum Refining and Petrochemical Industry, and P. D. Grigoryev, his colleague from the Ministry of Chemical and Petroleum Machine Building, met only in September and signed a schedule for the manufacture and deliveries of equipment. The bulk of it should make its appearance at the construction site as the curtain falls, as they say. Even with round-the-clock shock work, there will be very little time left for installation.

Work is proceeding slowly at the Scientific Research and Design Institute for Tire Industry Equipment (the NPO [scientific production association] Yarpolimermash). Polymer machine building plants in Tambov, Yaroslavl and other cities have not begun to carry out the assignments at all or are still just becoming familiar with them. V. G. Gladilovich and B. M. Petrov, deputy director of the NII [scientific research institute] mentioned, have agreed that until the design for the metallic cord tire is ready, it is impossible to complete the technology for its manufacture under production conditions.

They are attempting to prove otherwise at the scientific research institute which is responsible for this. Meanwhile, a reliable, highly productive line for assembling new tire casings cannot be set up until all the parameters and characteristics of the product are known precisely.

The third indispensable participant in renovation is the construction organization. The Yarkhimpromstroy trust has considerable experience in building large projects, although the trust ruins the plan of operations at the tire plant year after year. Both the enterprise management and the designers are at fault here, but the fact that the headquarters of the sector underestimates the importance of retooling this production is still the basic cause. Considering that the project has not been included in the listed products of the national economic plan, the relationship to it of the trust, the Glavverkhnevolzhskstroy and the Minsevzapstroy [Ministry of Construction in the Northern and Western Regions] is appropriate. But after all, the second stage of reorganization, no smaller in scale according to the plan, lies ahead.

The most difficult work with the least prestige at the enterprise today is the vulcanizing of casings in an autoclave (there are 92 of them at the plant, one-third of all those retained in the sector). In order to mechanize and automate this technological process, roughly 5 hectares of additional space are needed. Production has to be moved the other side of the Volga. There are many decisions in this connection, but not one of them has been followed through, which EKONOMICHESKAYA GAZETA wrote about as far back as 10 years ago. A new period for relocation was identified recently--1988, although not even the indications of a forthcoming move are apparent at present.

Despite the vast capital investments already used up and those being allocated again, the renovation has been dragged out inexcusably (just one section for 48 months. That is enough time to build a new plant!).

And lastly, the renovation project resolves only the technical problems, without dealing with problems of the collective's social development.

"I cannot recall that construction workers were to have turned over a large apartment house to the tire workers," said V. A. Shchapov, deputy manager of the oblast office of the Stroybank [Bank for Financing Capital Investments]. "But their apartment problem is much more acute than at many neighboring enterprises. Leaving it, as well as other matters related to social, cultural and living conditions, out of the plans is totally incorrect, in my view."

8936
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SOVIET 'RAILROAD TRANSPORT-86' EXHIBITION DETAILED

Exhibition Summarized

Moscow ELEKTRICHESKAYA I TEPLOVOZNAYA TYAGA in Russian No 10, Oct 86 pp 6-7

[Text] July 8-17, 1987, at the VNIIZhT's [All-Union Scientific Research Institute for Rail Transport] Experimental Ring at Shcherbinka Station, the international industrial exhibition "Railroad Transport-86" took place. There was an additional "Specialist's Day" on July 22. Essentially, this forum summed up developments in rail transport development over the past 10 years. Promising trends for improving technology and equipment for passenger and freight transportation, mechanization and automation of transport processes, reducing labor, material and power costs and improving economic efficiency were identified on the basis of world-wide achievements and the most advanced experiences.

The exhibition united scientific and technical forces of specialists from countries with divergent social structures for a successful joint resolution of the many complex transport problems. The enormous possibilities for cooperative development and production of rolling stock, stationary installations, and communications, automation, computer and microprocessor devices were demonstrated, taking as the example the close collaboration of the countries of the socialist camp, the USSR and Finland.

Delivery of the 75,000th rail car from GDR mechanics to USSR railroad workers and demonstration of Soviet-Czechoslovakian electric passenger locomotives and diesel shunting locomotives, 2000 and 5200 of which, respectively, have been delivered from the CzSSR to the USSR were a shining example of this collaboration.

The following were the primary problems of the international exhibition: showing off the newest scientific and technical achievements of the Soviet Union; familiarization of Soviet specialists with the most advanced foreign experience on a broad scale and its subsequent incorporation into the national economy and the establishment of business contacts, the development of scientific and technical, economic and export-import connections.

Companies and organizations of socialist and capitalist countries whose equipment, technology and scientific achievements corresponded to the theme were

invited to participate in the exhibition. In order to create the conditions for wider participation by Soviet and foreign organizations and firms in the exhibition, 25,000 square meters of covered space, 150,000 square meters of open sites and 10 kilometers of track were readied.

Twelve ministries, the State Committee for Science and Technology, 128 enterprises, 11 design bureaus and 11 scientific research institutes from throughout the country participated in setting up the Soviet exposition. There were 16 divisions to the exposition, in which 865 exhibits were shown in accordance with the thematic plan.

Locomotives occupied a significant place among them, including the 12-axle VL85, an ac electric freight locomotive, and the VL15, a dc electric freight locomotive; the 2TE121 and 2TE136, mainline diesel freight locomotives; the TEP70 diesel passenger locomotive and the TEM7 and TGM8 diesel switch engines. Models of locomotive units and assemblies were also presented. There were daily demonstrations of the processes for locomotive control using the "SMYeT" and "SMYeTR" systems, as well as stands for testing locomotive bogies, brake shoes and disc brakes, etc.

The following were presented in the section "Electrification and Electrical Power Installations:" a remote control system for electrical power supply which uses integrated microcircuits, samples of equipment used at traction substations and in the contact network of electrified lines, as well as instruments to monitor the operation of electrical power supply installations.

In the section "Repair of Rolling Stock, Metals and Welding," they showed flow-conveyor lines for major repair of series VL10 electric locomotives and 2D100 diesel locomotives, a flexible automated sector for manufacture of spare parts for railroad equipment, parts for diesel locomotives and diesel-trains which are repairable and hardenable using thermal diffusion spray coating [gazotermicheskoye napyleniye] and other methods.

The Soviet exposition contained a section on scientific and technical literature and information on rail transport.

An analysis of data about the Sovietdivisions at the international exhibitions in 1977 and 1986 attests to the expansion of rolling stock, machinery, equipment and control systems which were shown, which reflects the significant increase in the level of equipment supply for rail transport during the past 9 years. There were twice as many exhibits, rolling stock, machinery, equipment, machine tools, control systems, instruments and automatic devices displayed.

Specially printed catalogues of the Soviet exhibits, as well as prospecti for 18 product descriptions grouped by exhibit acquainted the specialists with the exhibition's participant enterprises and their production program.

More than 150 enterprises, organizations and companies from 21 countries and West Berlin participated in the industry-wide international exhibition. This number includes participants from 8 socialist countries -- NRB [People's Republic of Bulgaria], VNR [People's Republic of Hungary], GDR, PNR [People's Republic of Poland], USSR, CSSR, SRR [Socialist Republic of Rumania] and SFRY, who showed 300 exhibits.

Ninety-five firms and organizations from 14 capitalist countries -- Austria, Belgium, Great Britain, Ireland, Spain, Italy, the USA, Finland, France, the FRG, Sweeden, Switzerland, Japan, India and West Berlin showed about 200 exhibits at the exhibition.

During the course of the international exhibition's work, the Ministry of Railways and the "Expocenter" of the USSR Chamber of Commerce and Industry held an international symposium of Soviet and foreign specialists on a commercial basis. The symposium was devoted to a discussion of critical problems of development and employment of modern means of transport. Leading specialists in rail transport from USSR, GDR, VNR, PNR, SFRY, Great Britain, Ireland, Italy, Finland, France, FRG, Switzerland and Sweeden participated. Seven Soviet and 33 foreign papers were read.

The Soviet specialists related scientific and technical achievements in the area of electrification of railroads, automation of the transportation process, organization of heavyweight and extra-long train traffic, developing powerful ac electric locomotives and modern automation, remote control and communications equipment for USSR rail transport.

The topics for papers of the foreign scientists and specialists encompassed the questions of development and operation of traction equipment (Finland, FRG, Ireland), production of new freight and passenger cars (GDR, Finland), improvements to upper components of the track structure (VNR, FRG, Great Britain), repair and maintenance of track (Switzerland), incorporation of the latest automation and signaling systems (GDR, PNR, Great Britain, Finland, France, Italy), the use of highly productive equipment for repair of rolling stock (PNR, Finland, France) and specialized container applications (Finland, France).

A Franco-Soviet colloquium was organized on the Exhibition grounds by the Administration for International Traffic and TsNIITEI MPS [Central Scientific Research Institute of Information, Technical and Economic Research and Rail Transport Publicity of the USSR Ministry of Railways], during which time 17 reports devoted to railroad electrification, construction and operation of high-speed 'TGV' [French -- 'tres gran vitess' -- very high speed] lines, development of new electric and diesel locomotives and two-tiered passenger cars and other problems were heard from French specialists. Videofilm and slides were shown during the course of the colloquium.

While the exhibition was open, it was visited by more than 300,000 guests, including 150,000 specialists. The familiarization of specialists from all the railroads, plants, subway systems, institutes and other organizations of MPS, who came to Moscow on special trains (up to 2,000 persons a day) with the exhibition's exhibits proceeded in an organized fashion.

By MPS decree No. 364-u, dated 17 June 1986, railroad executives have been entrusted with working up and putting into operation measures for the broad-based incorporation of the scientific and technical achievements presented at the exhibition; they are to report on the work they have done in November of this year.

Senior level officials from the CPSU Central Committee, USSR Council of Ministers, USSR Gosplan and a number of ministries and departments visited the international exhibition.

Among the foreign guests at the exhibition were NRB Minister of Transport V. Tsanov, PNR Minister of Railways Ya. Kaminski, representatives of transport ministries from the socialist countries in Moscow, as well as the Finnish Minister of Transport M. Luttinen, the French Minister of Foreigh Trade (M. Nuar), the president of the Federation of the French Railroad Industry, the president of the French Exhibitions Committee, (P. Syudro), and others.

The exhibition received high praise from the visitors, as was reflected in the numerous entries in the guest book. These entries are presently being analyzed, systematized and will be considered in drawing up plans for scientific research and the incorporation of new equipment.

The results of the international exhibition "Railroad Transport-86" were examined by the Collegium of the MPS, which adopted a suitable resolution. In it, in part, it was proposed that all railroad journals broadly publicize the achievements which were presented at the exhibition. In this issue, we present a special selection of materials devoted to a number of exhibits at the industrial exhibition. Similar articles will continue in subsequent issues of the journal.

Soviet Electric Locomotives

Moscow ELEKTRICHESKAYA I TEPLOVOZNAYA TYAGA in Russian No 10, Oct 86 pp 8-11

[Contribution by V. N. Bzhitskiy, special correspondent for the magazine: "What Is New in Electric Locomotives"]

[Excerpts] What kinds of electric locomotives and electric trains are coming to replace current rolling stock? The international exhibition "Railroad Transport-86" presented a broad panorama of the latest developments from scientists and locomotive builders in this area.

Soviet Exhibits

The most powerful electric locomotives in the world are Soviet. The Novocherkassk Electric Locomotive Works presented the VL85 electric locomotive, a new generation of machine, at the exhibition. This 2-section, 12-axle ac electric freight locomotive is rated at 10,000 kWt under hourly conditions, and has a tractive power of 74 ton-force; its designed speed is 110 kilometers per hour.

The body of each section is supported on 3 2-axle bogies, with transfer of tractive and braking force from the bodies to the body being realized via inclined linkages, which insures automatic equalization of the bogie axle loads without using anti-relief devices [protivorazgruzochnyye ustroystva].

A smooth, contactless system is used for regulating voltage on traction motors, the motors being powered from thyristorized rectifier-inverter converters. Regenerative braking with ac is provided, with 9-15 percent of the power expended in traction being returned into the contact network.

For operating trains of extended length of extra weight, as well as for working in sectors with a steep grade, the locomotive is outfitted with a system of multiple units, which makes it possible for a single operator to control 2 connected locomotives or the electric locomotive and one section from any cabin.

An automatic system for controlling operations while in motion improves the traction and braking properties and improves the locomotive's reliability. It lets the locomotive run out to an assigned speed with an assigned corrent, with this speed being subsequently maintained. In the regeneration mode, the system provides for initial light braking, maintaining a set speed on grades and a set force when braking to a stop. It also performs the functions of an overload limiter and protects the equipment during emergency conditions.

Two versions of the locomotive are called for: for moderate climate and for conditions on the BAM [Baykal-Amur Mainline]. The NEVZ [Novocherkassk Electric Locomotive Works] will begin series production of the VL85 in the near future.

Georgian locomotive builders presented the VL15 mainline electric locomotive. Its hourly rated output is 9,000 kWt (greatest in the world for dc), its tractive force is 68.8 ton-force, and its designed speed is 100 kilometers per hour. The design of the body and the running parts are practically identical to the VL85.

The following features are employed on the locomotive: a static thyristor converter to supply the excitment windings of the traction motors during regeneration; an automatic regenerative braking control system; a compressed air drying unit, which insures faultless operation of the pneumatic system in winter and a circuit for switching the traction motors from one connection to another using a rectifier method, which excludes breaks in the tractive force.

The new locomotive's tractive force has been increased 11 percent over the 3 sections of a VL11, it is 4.26 meters shorter, and consequently repairs are more convenient. The more spacious cabins made it possible to make the train crew's work more comfortable.

The availability of 3 groupings for the VL15's 6 traction motors in each section provides the following: uniform increments of voltage to the motors, and, correspondingly, uniform distribution of speed regulation ranges; reduction of losses in the start-up resistors when starting off and while running and reduction in the power of the start-up resistors. The designers achieved a reduction to two-thirds of the original number of rheostat contactors; they were able to make individual units and devices larger while decreasing their number at the same time and they reduces the locomotive's current when starting off, which improves working conditions for the current collectors and the contact network.

Specialists from the Riga Rail Car Building Plant demonstrated a new ER29, model 62-229 ac electric train. Its primary configuration is 12 cars (6 motorized, 4 drawn, 2 head cars). The train can also be made up of fewer cars.

The train is controlled using a multiple unit system. The cars have passenger exits for both low and high platforms. The salon cars are equipped with comfortable semiupholstered seats and baggage shelves along the length of the side wall.

The passenger compartments will be heated with electric heaters, and there will be radiator heat-up of the fresh air coming in, forced ventilation and fluorescent lighting. There is a radio information system for passengers in the cars, as well as a "passenger-crew" intercom system.

The fundamental difference of the new electric train is that it is equipped with a pulse-phase regulation system in the pulling and regeneration modes. This system permits regeneration down to a complete stop. The car length has been increased to 21.5 meters, entry doors are wider and the car platforms are more commodious. A new design for placing equipment throughout the cars has been employed, in particular, the current collectors have been installed in the head cars.

A single traction motor is rated at 260 kWt, and the load per axle of the motorized car on the rails is 21 ton-force, and that for the head and drawn cars is 19 ton-force. The designed speed of the train is 130 kilometers, there are 621 seats, with total capacity of 1586 persons. The car bogies are twin axle, with two-stage leaf spring suspension with coil springs.

An experimental prototype of the ER29 electric train has been produced. Along with the ER30 dc now under development, they will constitute a new generation of motorized car rolling stock which will find widespread employment on the nation's railroads in the 1990's.

Aside from rolling stock, new locomotive components and devices were shown at the exhibition. The NB-514 pulsing current traction motor attracted the attention of visitors. It is intended for the VL85 locomotives, and may be installed on the VL80S and VL80R.

The motor is a 6-pole compensated machine with series excitation, an independent forced ventilation system, two-way rigid spiral transmission and axial support suspension. Having been developed on the basis of the series production motor NB418K6, the new machine has 6 percent greater power within the same dimensions, with improved reliability due to higher commutation stability, the use of class 'F' heat resistance thermoreactive insulation, etc.

The NB-514 traction motor is rated at 835 kWt, voltage at 980 volts, armature current of 905 Amps, 905 rpm, and weighs 4280 kilograms.

There is yet another innovation, the MBU-726 microprocessor controller for a mainline electric locomotive's traction drive. It can be used to control electric rolling stock and in setting up automated control systems. The controller makes it possible to unify the equipment for controlling various electric locomotives and control the traction drive more efficiently.

The device handles 200,000 operations per second, power supply is 5 volts, its dimensions are 456 x 330 x 310 millimeters, and it weighs 8 kilograms.

The BTK-001 unit has been designed for monitoring the status of heat in the electric power equipment of electric locomotives. The monitoring is carried out with the aid of thermal process modeling, with current intensity and ventilation

being taken into consideration. Temperatures in the range of 0 - 200 °C. are monitored, the dimensions of the instrument are 500 x 470 x 220 millimeters, and it weighs 17 kilograms.

The F442 single-phase electric energy measuring device was demonstrated at the exhibition. It is intended for measuring active power consumption on ac electric locomotives during the traction and recuperation phases. The instruments has class 2 accuracy, its dimensions are 240 x 240 x 115 millimeters, and it weighs 5 kilograms.

The measuring device has the following features: protection from spiked overloads up to 1.5 kilovolt with pulse length of 2 microseconds; an optical indicator of correct hook-up and proper operation and transformer connection of the current circuits, which permits full galvanic decoupling between current and voltage circuits. Moreover, the instrument lacks couplings to hook up plates, which improves reliability of its operation when there is vibration; there is also a telemetry output.

The new RVKU-3.3A01 valve-type discharger serves to protect the electrical equipment of rolling stock rated at 3.3 kV dc and other high voltage circuits and installations from atmospheric and commutation overloading. Its dimensions are 290 x 290 x 400 millimeters, and it weighs 30 kilograms.

The discharger delays 500 current pulses with an amplitude of 3000 amps, a wave front of 8 microseconds, and wavelength of 20 microsecond with subsequent flowing of the accompanying current. Moreover, the discharger delays 20 pulses of commutation overload current having an amplitude of up to 1,500 amps, with full duration of up to 5,000 microseconds, or 100 pulses with an amplitude of 800-1,000 amps and duration of 500 microseconds.

Electric Locomotives from the Socialist Countries

Foreign firms presented several interesting developments at the exhibition. Unfortunately, due to the difference in the track width, few participants could show full-scale examples of their rolling stock, and they told about their products with the aid of models, information stands, etc.

Developments of Companies from Capitalist Countries

The wide participation of companies from the West in the international exhibition "Railroad Transport-86" was a reflection of the growing business cooperation between countries with different social structure. Our country, for example, supports constant ties with Finnish partners. More than 100 Srl Soviet electric locomotives are in operation in Finland.

Participation of the firm ("Kyumi -- Stryomberg") in development of the VL86F mainline electric freight locomotive with asynchronous traction motors is a new stage in collaboration. The firm is developing and manufacturing a frequency converter using Soviet semiconductors and another cell base to control the motors.

The electric drive for each bogie is an autonomous unit consisting of a rectifier device with induced commutation, an intermittent constant voltage link and 2 inverters which feed the asynchronous traction motors for the 2 bogie axles with an adjustable frequency. Regenerative braking into an ac current network of 25kV, 50 Hz is provided for by the circuit.

The ("Kyumi-Stryomberg") converter equipment underwent factory testing in Finland. The first experimental VL86F was developed in 1985. This locomotive has a drive part and body analogeous to the VL85, its hourly rated power is 11,400 kWt, tractive force when starting off is 120 tons-force, the designed speed is 110 kilometers per hour and it weighs 300 tons.

Automation in Rail Transport

Moscow ELEKTRICHESKAYA I TEPLOVOZNAYA TYAGA in Russian No 10, Oct 86 pp 12-15

[Contribution from N. A. Sergeyev, special correspondent for the journal: "Automation and Computerization of Transport"]

[Excerpts] Automation and computerization. These 2 words have firmly entered the live of railroad workers since the technology and management of the transport process is now being improved on the basis of the broad application of achievements of scientific and technical progress. The most important of them are automated control systems (ASU) and microprocessor equipment.

The prototypes presented at the exhibition permit us to increase the volume of transportation due to efficient management based on timely and reliable information concerning train traffic, the location of locomotives and the distribution of the rail car fleets. This is achieved by automating the handling of shipping documents and setting up automated information processing in a branched out, extensive transportation network.

The use of modern remote processing devices and a dialogue type service of the railroads' various services and divisions which participate in shipping is greatly helpful. The automated system of operational control of shipments on the Moscow Railroad attracted the attention of specialists. It is designed to analyze train and freight conditions on the line, and for operational planning of operations and compiling reports on the status of the car and locomotive fleets, and disturbances thereto.

Telegraph and telephone channels have been allocated for communications between stations and junctions with ASU and a network of information points equipped with microcomputers and data transmission equipment. Therefore any change in the composition or location of trains and locomotives is quickly transmitted to the central computer, which contains a dynamic model of the transportation process in an active status.

What are the advantages of automated shipping control systems on the railroad? First of all there is an early idea of train arrival information. This permits us to work up valid on-going and daily and shift plans for handling trains at switching stations, for their approach to junctions and unloading

stations and delivery of local cargo. The possibility of timely information being available for ones clientele is also important.

While ASU interested specialists, as a rule, another one, the "Express-2" attracted the attention of almost all of the visitors. The fact is that its job is to control ticket sales and reservations on the long-distance trains.

Almost all of us, even if only once a year, utilizes the services of ticket cashiers. Not too long ago, one had to spend a considerable amount of time to get tickets, and we were not always able to get them on the train we needed.

Now, using the "Express-2" ASU, a passenger can have travel documents for one-way and return travel, for one-way reserved seating, and for travel with connections en route taken care of in 50-60 seconds. Waiting time to a chasier's inquiry is no more than 10 seconds. And if there was formerly a 45 day limit on reservations, now it can be as long as 63 days.

These are only a few of the indicators which characterize "Express-2." It serves as many as 2,500 trains, 16 routes for through and trailer cars on a single train. The number of stations on a train's route can be as many as 256, the computer remembers all of them. The ticket cashier can select 6 train variations on the ASU keyboard, utilizing 24 types of reservations, at the desire of the passenger.

The "Express-2" system is currently operational in Moscow, Leningrad, Sverdlovsk, Kiev and Kharkov. The specialists which presented it emphasized that joining all railroads by ASU will permit the organization of a nation-wide automated system for managing ticket sales and passenger transportation. It will include more than 10,000 cashiers and several data processing centers. By the way, joint scientific research and design work is currently under way with Bulgarian and Hungarian specialists to set up "Express-2" systems in these countries.

Among locomotive engineers, there are a large number who work at switchyards. The shortcomings in the operation of the "route factories" which are caused by imperfections in working procedures is quite visible to them, and to many other railroad workers, by the way.

An ASU for operational work based on an SM-2M computer (ASUSS [Automated Switchyard Control System]) permits them to automate processing of information on trains which arrive at the switchyards and for operations with them. It provides the dispatcher personnel, station and division management and the railroad administration with reliable information about train break up and assembly.

Incorporation of ASUSS accelerates train handling, reduces labor costs for preparation of on-site and switching documents and storate lists. The automated exchange of train information between the computers of several stations and the railroad administration is going to be possible. The fact that the quality of operational station documents and reports is improving is also important.

Another development of the scientists and specialists of our country is closely linked to this one -- a system for automating the preparation and processing of train information in operations offices. It is intended for the automatic preparation of on-site documents and preparation of reports on transfer of rail cars from railroad to railroad and processing data on car and locomotive traffic at the station in small switching and sector stations and at stations which account for transfer of cars from railroad to railroad.

The information is provided on displays, printers, perforated tape or into a communications channel. All terminal equipment is installed at work stations for station workers. This permits their work to be made easier, and reduces unproductive losses of time.

A comprehensive automated system for control of repair production drew positive responses from the exhibit's visitors. It included ASU at different levels: the Main Administration of Rolling Stock Repair and Spare Parts Production at MPS, the repair enterprises, the ship, the section and the work station.

Such a combination sets up the conditions for successful long-range and ongoing planning and the operational management at 100 repair enterprises. Using the comprehensive system, it is possible to control the operations processes of accounting and setting norms and standards for material and technical supply and production retooling.

The results of solving a number of the most diverse problems (and there can be as many as 1,000 of them) speak for themselves: labor productivity and its quality improve, a product's production cost decreases and its quality improves.

The main part of the comprehensive system is occupied by the ASU for repair plant production, it may be. It is set up based on an SM-1420 computer. An important merit of the ASU is its universality and the possibility of using it for all types of production.

For example, in a repair-and-assembly [situation] it calculates daily quotas on the basis of monthly network schedules, with prospective work volume for the coming 1-2 days and liabilities being taken into consideration. In casting, forging and working production, the system determines daily quotas based on the results of monitoring the status of reserves and predicting the extent to which repair and assembly shops will be supplied.

Calculations of network schedules for operations and mass output of items and plans for products (taking part and component supply into consideration), daily quotas for sectors and individual workers and much more have beenautomated using ASU. The developers emphasize that the use of production control systems will coordinate the activity of all executives, will permit the repair process to be planned more operationally and spare parts availability to be controlled more practically. The fact that document turn-around will be sharply curtailed due to the widespread use of operational ASU documents is also important. As yet, the time it takes to pass through a plant is still great.

Automated work stations ARM were a larte part of the Soviet division of the exhibition. The VNIIZhT's scientists and specialists from many railroads created comfortable, highly productive ARM for deputy station and depot masters, the senior managerial worker and economist and subway line dispatchers.

When working with, for example, the "Depot" ARM the work assigner enters into a TAP-34 microcomputer data from the engineer's route. Then he selects the necessary code and the information which has been entered starts to be processed. If he needs to know the precise location of locomotives or the availability of crews and other operational data, the computer prints out on the display the needed information by command.

The "Depot" ARM permits transmission of information on rolling stock and locomotive crew utilization to a central computer and to the railroad division. When a shift is completed, operations documents concerning losses due to inefficient use of the fleet and servicing personnel are printed. Thus, the assistant depot master obtains at his disposal a reliable source for information and for processing the numerous data which come to him hourly.

As is known, the interval for subway trains during peak hours is less than a minute. A dispatcher has to be in a state of high nervous tension to follow their movement along the line, control the running time and their speed. A dispatcher ARM eliminates the stress load.

Information about train location for all trains on the line, with the route number, is shown on a color graphics terminal. The number for a train is moved along the screen as the train moves along. If any train is delayed for a time greater than is allowed, its number automatically lights up in red.

At the request of the dispatcher, information about the traffic schedule which has already been met is displayed on the screen. It is presented in tabular form, in which the actual departure time for the train from each distinct point is shown.

The operating principle of the ARM is based on following the trains as they move along. A computer, which receives signals from the code centralization system in coded form, does this. When a train leaves the depot, the operator enters his number into the computer once. Subsequently, tracking his and other routes is done automatically.

An automated system of accounting, setting standards and analyzing fuel and power consumption to pull trains, based on an "Iskra-226" microcomputer, has already been operational at MPS for several months. Its hardware consists of the computer, situated at a specialist's work station, The system consists of a 31-centimeter (diagonal) display screen which can display 24 x 80 symbols, a printer and a data input device.

Each year the number of points with the DISK-BK-Ts, a comprehensive, automatic system for monitoring the mechanical condition of rolling stock while a train is in motion, increases on the railroad network. It is intended to detect

overheated wheel boxes, taking into consideration the type of bearing and flaws on the rail's running surface: wheel burns (dents), welded-on metal and ununiform wear.

Using it, one can record data on the presence and disposition of broken cars in a train arriving at a station by remote control. It also permits us to transmit information from control points on the line to the dispatcher post on a through-traffic sector.

The system's basic components comprise 3 sub-systems: detection of overheated wheel boxes (DISK-B), wheel defects (DISK-K) and centralization of information detection (DISK-Ts). It can be supplemented with devices for detecting dragging parts (DISK-V), wheel wear (DISK-P), braked wheel pairs (DISK-T), car overload (DISK-Z) etc.

DISK-BK-Ts controlls freight trains moving at speed from 5-125 kilometers per hour. Passenger train speeds can reach 250 kilometers per hour. The distance from the equipment on the line to the station equipment cannot exceed 10 kilometers. The range for transmission of information from points on the line to the centralized post is 400 kilometers.

They are acquainted at many depots with the automatic braking system (SAUT). Its standardized version SAUT-V was exhibited at the exhibit. The equipment included antennas, a speed measuring device, an optron testing device, a control panel, a connection box, control relay and electronics devices and a power supply source. On the locomotives which are being outfitted with the system, the engineer's brake valve is being fitted with a special adaptor.

SAUT-V can be used on sectors with three- or four-aspect automatic block signaling and centralized semi-automatic block signaling. The designers anticipated it working with ALS [Automatic Locomotive Signaling], ALSCh [expansion unknown] and ALS-Ye [expansion unknown], as well as its installation on electric and diesel trains and freight and passenger locomotives, with the following speed limits being established: 130 kilometers per hour for commuter trains, 160 kilometers per hour for passenger trains, 100 kilometers per hour for freight trains and 200 kilometers per hour for express trains.

In SAUT-V, as in the sight braking system [sistema pritselnogo tormozheniye], manual input of data about the braking characteristics of each train is excluded. They are automatically incorporated during test braking and subsequently thereafter. Its distinctive feature is the transmission of information from the track to the locomotive. To do this, the principle of physical modeling of the quantitative value of information being transmitted, which are proportional to the length of the active sector of the rail circuit which is connected to the track generator, is utilized.

In this case, we get a communications channel with a high degree of interference resistance, over which the high-quality information values pass. Its quantitative value is formed at the locomotive by summing the pulses from the track and speed sensor output.

The incorporation of SAUT-Ⅴ increases allowable speeds when proceeding through a yellow semaphore, and it permits train traffic to be organized at intervals of 2 block sectors. But the most important thing is that train traffic safety is improved. For example, when the set speed is exceeded by more than 5 kilometers per hour, emergency braking occurs.

So the engineer can make the correct decisions, SAUT-Ⅴ feeds to his panel information about the distance to a signal, the permissible speed at the end of each block sector, the speed margin (the difference between that on the display and the actual speed), and brake efficiency.

This innovation of the scientists permits a braking accuracy of ± 40 meters for freight trains and ± 20 meters for passenger and commuter trains with regard to a point estimated to be 50 meters before a stop signal to be achieved. If it is necessary to stop more precisely, the engineer must press a button marked "Tightening [podtyagivaniye]."

The exhibition at Shcherbinka came to be a review of the latest achievements of science. All those who visited it became the first viewers of the most advanced railroad equipment. Many of the automated control systems and microcomputers can, without exaggeration, be called the equipment of tomorrow. Let it be that for the time being, they are the only examples available; just a short time from now, series-produced ACS, automated work stations and other equipment will start to appear on our country's railroads.

Soviet Diesel Locomotives

Moscow ELEKTRICHESKAYA I TEPLOVOZNAYA TYAGA in Russian No 11, Nov 86 pp 10-12

[Contribution by L. V. Rudnyeva, special correspondent for the magazine: "What's New in Diesel Locomotives"]

[Excerpt] In the last issue of the magazine, we told about new electric rolling stock which was presented at the international exhibition "Railroad Transport-86." Diesel equipment was also widely demonstrated in the exhibition's pavillions and open display areas.

Soviet Diesel Locomotives and Their Components

The Voroshilovgrad diesel locomotive builders showed off the best samples of their future product. One of them, the 2TE121 2-section freight locomotive, is rated at 2 x 4,000 hp, with ac/dc electric transmission. One section has a service weight of 150 tons, and provides 25 ton-force on the rails from a single wheelpair. The locomotive yields 30 ton-force continuous tractive force, and its designed speed is 100 kilometers per hour. It has mounted on it a 2V-5D49 diesel engine and an A714U2 generator unit. The latter consists of a traction and an auxiliary generator, the rotors of which are mounted on a single shaft. The rectifier installation is designed using silicon avalanche-type rectifiers.

The auxiliary generator provides power for the locomotive's own needs, both ac and (through the rectifier) dc. Self-excitation of the auxiliary generator

and excitation of the traction generator are accomplished via a thyristor unit. Self-contained automatic, contactless units are used in the system to regulate theelectric transmission and the auxiliary electrical equipment.

The locomotive is equipped with a rheostat brake. The brake resistor units, with motorized fans, are mounted in the roof of the body. The diesel engine is cooled using a double-flow system. In the high-temperature system, it is water-cooled, and in the low-temperature system, it is cooled with oil and the diesel's supercharging air stream.

The diesel's cooling device is shaft-type with 2 fans 1600 millimeters in diameter with revolving blades which insure the smooth regulation of the supply of outside air. The fans are driven by asynchronous electric motors.

The traction equipment is cooled by a centrally located fan which is mechanically driven from the generator unit's shaft via an angular reduction gear. The cooling air for the system is cleaned in replaceable filters situated in the roof of the body.

The brake compressor is driven from the diesel engine through a distributing reduction gear. The starter-generator is also connected with this reduction gear. The section body is a load-bearing design without cross stays with a single cab for the engineer.

Three-axle bogies without cowcatchers [beschelyustnyye] with two-stage leafspring suspension are employed on the locomotive. The traction motors have supporting frame suspension.

The "Voroshilovgradteplovoz" Production Association also presented the TE136, a new mainline single-section diesel locomotive rated at 6,000 hp with ac/dc electric transmission. This is the most powerful of the locomotives being built at this time. It is intended for operation in freight trains weighing 9,000 tons. The locomotive has a service weight of 200 tons, and provides the same axle load on the rails as does the 2TE121. Its continuous traction force is 47.9 ton-force, and its design speed is 100 kilometers per hour.

The diesel locomotive is equipped with a 20ChN26/26 diesel engine and an A716 traction unit. They are joined together with a plate coupling. A combined cooling device is employed on the locomotive: the water for the diesel engine and the water-oil heat exchanger is cooled in sections of the radiator, and the supercharger air is cooled in a separate unit with water-air cooling.

All of the power and auxiliary equipment is distributed within the body of the load-bearing structure, which is mounted on 2 4-axle bogies. Each bogie consists of 2 2-axle bogies joined together with a low-lying balance beam and a hinged connection. In the center of the beam is a recess for the kingpin assembly.

The supporting frame suspension of the electric traction motors, in conjunction with the supported axle suspension of the traction reduction gear is a special feature of the wheel and motor units. The locomotive is equipped with rheostat braking.

The TE127 diesel locomotive, rated at 2400 hp and designated for pulling freight and passenger trains over sectors of track where the axle load is restricted (its load is 16 tons-force) was of interest to specialists. This locomotive also has electric ac/dc transmission, a service weight of 96 tons, continuous tractive force of 18 ton-force and a design speed of 120 kilometers per hour.

The following are employed on this locomotive: a 12ChN21/21 diesel engine and A715U2 traction unit with flange connection and cowcatcher-less bogies with separate drive for wach wheel pair from the traction motor. It has 2-stage leaf-spring suspension. The machine is distinctive because of the improved utilization of the coupling weight due to the traction motors having been positioned to one side in the bogie.

Several switching and industrial locomotives were demonstrated by the Bryansk, Lyudinovo, Muromsk and Kambar plants. The new TEM7 and TEM3M locomotives with electric transmission (the first on ac/dc current, the second on dc) are intended for switching and delivery work.

Within the electrical system of the TEM3M diesel locomotive (rated at 1,200 hp) connection of 6 traction motors in 2 parallel groups and 2 stages of field attenuation are called for. On the customer's order, this locomotive can be equipped with electric and oil heaters, double insulation of the engineer's cab doors and double-glazed front-facing windows, as well as auxiliary heating in the cooling chamber and the for the storage battery.

The TEM7 diesel locomotive has greater power (2,000 hp) and can work with trains weighing 4,000-6,000 tons. Its system for regulating and connecting the traction motor windings insures the realization of rigid characteristics for the traction generator. Angled connecting rods, low-lying king pin assemblies and units which add weight to the bogies [dogruzhateli telezhek] are employed for more efficient transmission of the tractive force.

Diesel locomotives with hydraulic transmissions were represented by 3 exhibits, the TGM8E, TGM40 and TGM23V. The first of these (rated at 800 hp) is intended for operation at industrial enterprises in countries with moderate or tropical climate with outside temperatures up to 40°C. It may be delivered with a system permitting 2 units to be operated by a single engineer.

The second, the TGM40 (rated at 400 hp), can be operated on track at industrial enterprises. It features the utilization of 2 two-axle bogies, permitting it to be operated on curves with a radius as small as 40 meters. Modern 2-transformer transmissions with 2-pulse control are employed on the locomotive.

Two identical control panels are installed opposite each other on the diagonal, as are comfortable upholstered seats which are adjustable up and down and front to back, swivel on a center post and can be locked in working position. Another feature of the cab are broad windows (with an area of 6.2 square meters) which provide a good view of the track.

The TGM23V (rated at 400 hp) is intended for operation on track at industrial enterprises. The locomotive's body is a hood-type design, providing significant convenience for the train crew when servicing the power train components.

The diesel-hydraulic power train is situated on a frame of welded construction. Transfer of torque from the hydraulic transmission is realized via propeller shafts, axial reduction gears and a recoil shaft [otboynyy val] to the locomotive's three wheel pairs.

From diesel powered rolling stock for passenger service, the TEP70 diesel locomotive and the DR1A diesel train were presented. The TEP70 is characterized by the fact that it is one of the most powerful passenger diesel locomotives in the world; it uses a 16-cylinder D49 diesel engine (as does the 2TE121) and an ac/dc transmission.

The locomotive has a body of load-bearing design which is supported on 2 three-axle bogies. Here supporting frame suspension of the electric traction motors has been used. The locomotive weighs 129 tons, it has capacities for 6 tons of fuel and 0.6 tons of sand.

The DR1A is a 6-car unit (2 motorized head units and 4 drawn cars) with comfortable passenger compartments. The cars have been designed to permit passengers to exit at both low and high platforms. The compartments are appointed with 2-backed divans and wide windows. The walls are covered with laminated plastic. The compartments are heated by air and by radiator, and the control system automatically keeps the temperature in the compartments within the range 15 ± 3 °C with the outside air temperatures down to -40 °C. An original bogie design insures a very smooth ride.

Control cabs are built into the motorized cars, thanks to which the train can be operated in shuttle fashion, without having to turn the train and cars around. The main units of the power train are a 4-cycle M756B motor with a gas turbine supercharger, rated at 1,000 hp, a hydraulic transmission with 2 hydraulic transformers and an air compressor, all mounted on a common power frame and attached to the car body frame by shock absorbers.

Specialists also familiarized themselves with new diesel locomotive components. The 1-20DG and 2V-9DG diesel motor-generator units, which can be installed on mainline locomotives with ac/dc transmissions were exhibited. The diesel engines in these units are 4-cycle V-designs. The 20ChN26/26 (in the 1-20DG unit) has a 2-stage supercharging system and dual intermediate cooling of the supercharging air after each stage. The 16ChN26/26 diesel engine (in the 2V-9DG unit) has gas turbine supercharging.

The design of the diesel engine-generator units features the use of a block with smooth separation of the bearing unit, a steel crankshaft with counterweights on each web and pistons with greater gas sealing properties.

The 12ChN21/21, which is installable on the TE127 diesel locomotive was also shown separately. It is a V-12 model high-speed, heavy-duty diesel engine with a high-temperature cooling system.

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LABOR ASPECTS OF BELORUSSIAN RAILROAD EXPERIMENT

Moscow EKONOMICHESKAYA GAZETA in Russian No 51, Dec 86 p 14

[Article by V. Charykov, Chief of the MPS Labor and Wages Administration: "The Basis is the Experience of the Belorussian Railroad Workers." First four paragraphs, printed in italics, are in form of newspaper introduction. Passages enclosed in slantlines printed in boldface type.]

[Text] New terms for wage payments will be introduced on all railroads, subway systems and in associations for industrial rail transport in 1987. This will permit more than 200,000 workers to be released for the needs of the country's national economy, and it will insure a significant increase in labor productivity.

The experience of the Belurussian Railroad, where during the years 1985-1986 there has been an on-going experiment to increase work efficiency and accelerate significantlythe rates of the growth in labor productivity, came to be the basis for the wage payment system being restructured.

Recently, Goskomtrud USSR [State Committee of the USSR Council of Ministers on Questions of Labor and Social Problems], the MPS [Ministry of Railways] and the Central Committee of the Trade Union of Rail Transport and Transport Construction Workers adopted a joint decree in which the positive results of the work of the Belorussian Railroad collective in increasing work efficiency and accelerating the rates of growth in labor productivity were noted. The considerable promise for adopting and disseminating this experience to other sectors of the national economy was also noted.

V. Charykov, Chief of the MPS Labor and Wages Administration talks with about the experience of this leading group of people at the behest of our readers.

Conditions of the Experiment and its Features

The initiative of the Belorussian Railroad workers was directed toward increasing working efficiency and accelerating significantly the rates of growth in labor productivity. /The incorporation of more modern work procedures and improvement in the utilization of transportation equipment, fulfilling plan quotas with a smaller contingent of workers and fortifying the stimulation of highly productive labor came to be the basis for this program./

/Under the new conditions, the funds for increasing the wages (salaries) have to be earned by the labor collectives themselves; additional monies are not allocated from the budget./ Let us remind you that formerly, when railroad workers got a salary increase, allocation of up to 80-90 percent of the additional requirements in the wage fund to these ends was called for from centralized sources.

It has been accepted that /the wage fund planned for the Belorussian Railroad in 1985 will be retained in the future./ In the event that shipment volume increases in subsequent years, it will be increased in accordance with the existing order. The relative savings in the wage fund which will be achieved during the preparatory period will be calculated into the bonus fund during the next year within the limits of above-plan profit.

/One feature of the experiment came to be the significant increase in tariff rates (amounts)--they are increasing by 30 percent,/ including by categories: for workers, by 20-25 percent and for senior engineers and technical personnel and white collar workers, by 30-35 percent. The increase in average monthly wages is planned for these categories in about the same proportion: for workers, by 10-18 percent, and for senior engineers and technical personnel, by 20-25 percent (by 13-15 percent for all categories of workers). And there is yet another feature: /they have decided to introduce the new tariff rates and amounts in stages (as a function of the accumulation of the necessary funds) and based on the workers' categories./

The savings achieved due to the introduction of organizational and procedural measures insuring that greater volumes of shipments to be assigned may be handled with a smaller contingent of workers came to be the source of capital for the introduction of the new tariff rates and amounts. These included the savings in the fund achieved from improving the setting of labor standards, regulating and re-examining prizes, surcharges and additional payments to the tariff rates (amounts), etc.

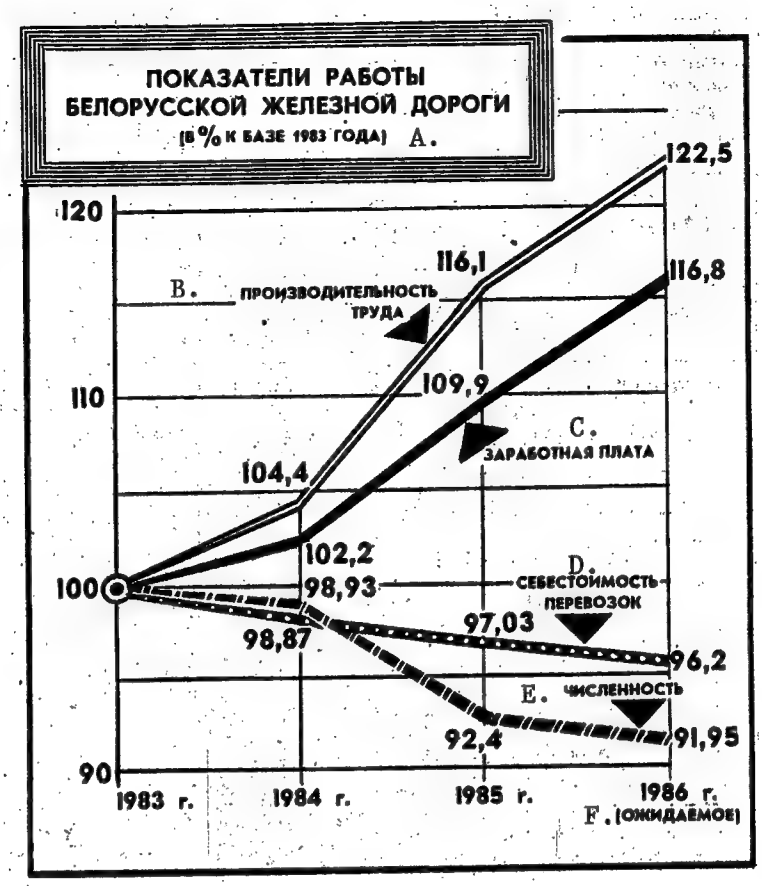
/It was a mandatory condition of the experiment that growth rates for labor productivity outstripped that of growth of wages./

/Estimates show that the savings in the wage fund (calculated per year) should be 29.4 rubles, and the number of workers subject to release is 11,200 persons./

Of the total amount of the wage fund which was needed to introduce the increased tariff rates (amounts), 23.4 million rubles had to be gained by reducing the work force, and the remaining 6 million rubles (1/5th of the capital), by overfulfilling shipping plans. In other words, overfulfilling work quotas came to be one of the basic conditions for carrying out the experiment.

What is New in the Structure, Management and Organization of Labor

The railroad's collectives prepared themselves throughfully and carefully to carry out practical measures to increase work efficiency and acceleration of the growth rates of labor productivity.



KEY:

A. Work indicators for the Belorussian Railroad (as a percent of 1983 as the base year)

B. Labor productivity

C. Wages

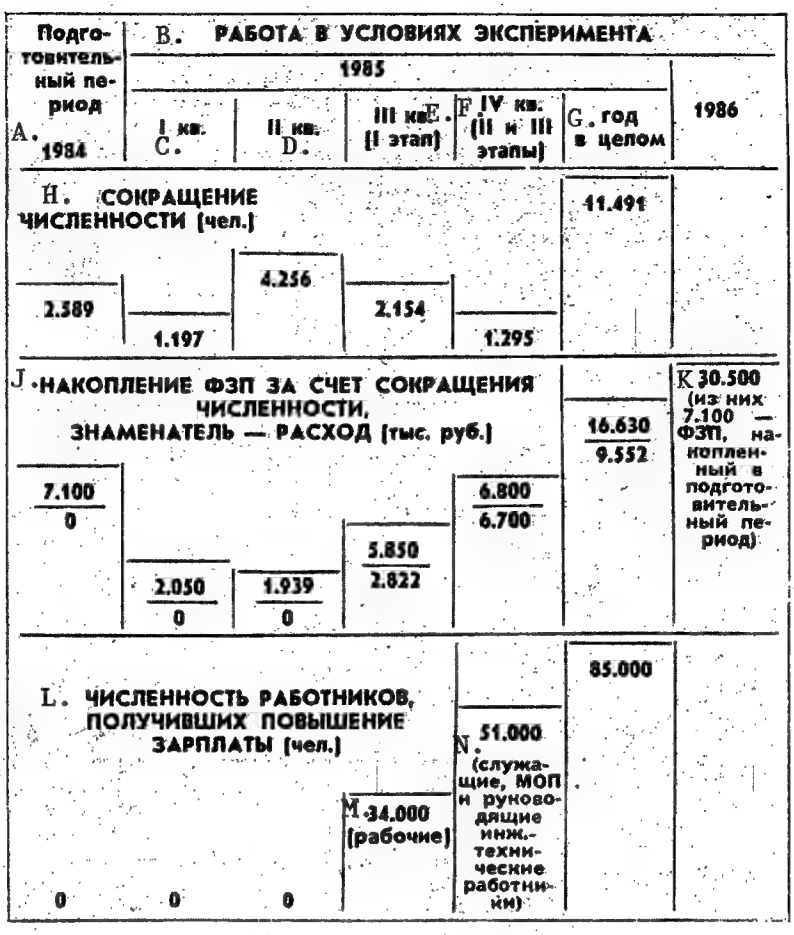
D. Shipping Costs

E. Contingent

F. 1986 (anticipated)

A great responsibility lay on the shoulders of economists. A detailed and careful analysis of the utilization of equipment and working time was made with the aid of senior workers in the railroad's economic services, divisions and enterprises and members of national economic subdivisions.

During the preparatory period, they made more than 1,500 photos and time and motion observations. It was revealed that on the average at the railroad's enterprises, from 10-22 percent of working time was wasted. The economists introduced proposals to plan work time more efficiently and to organize the work with a smaller contingent. Large reserves were revealed due to combining occupations and expanding service areas, the incorporation of team organization and stimulation for labor.



KEY

A. Preparatory period 1984

B. Work under conditions of the experiment

C. 1st Quarter

D. 2nd Quarter

E. 3rd Quarter (stage 1)

F. 4th Quarter (stages 2, 3)

G. Total for year

H. Reduction in work force (persons)

J. Accumulations to wage fund due to reduction in work force, denomenator -- expenditure (thousands of rubles)

K. 30,500 (of which 7,100 is the wage fund accumulated during the preliminary period)

L. Number of workers who received wage increases

M. 34,000 (workers)

N. 51,000 (white collar workers, junior service personnel and supervisory engineering and technical personnel

Particular attention was devoted to improving the process of setting standards. One may judge the scope of this work by the following fact: in just one year more than 40,000 time norms for piecework operations were re-evaluated.

/The share of measures to improve production and labor turned out to be the greatest (51.3 percent) of the total amount of savings./

The search for reserves for the growth in labor productivity also went in other directions. Thus, /the realization of measures to increase the technical level of production yielded more than 36 percent of the total effect (4,168 persons were released). For example, walking track inspections were vacated by improving the strength of the upper portion of the track and better maintenance. Crossings were equipped with automatic signaling devices.

Measures to improve production management had a significant place in actions taken for savings in labor and increasing productivity. Possibilities were located for concentrating production, eliminating enterprises with little activity and expanding service zones.

/Improving the management structure permitted us to conserve the labor of 1,420 persons (1,336 according to plan), which was more than 12 percent of the total worker reduction./

Let us remind you that, according to estimates, it was necessary to release during the course of the experiment more than 11,000 persons. Of course, it is difficult to determine where, how many and whom to get rid of. Nevertheless, the most complicated thing is to assure people of the expedience of the decision, to explain to them that there can be no offence here, that the common concern will win out.

For practical purposes, work to reduce the workers' contingent was begun as early as the end of 1984, when preparations for the experiment were being developed. Hiring for vacated positions from without [the enterprise] was stopped. As a result of this measure, they succeeded in significantly reducing the workers' contingent before the experiment started.

Railroad, party and trade union organization managers undertook a great explanatory effort within the labor collectives. People were told about the tasks confronting the railroad's workers and ways for searching out production reserves and reducing losses were determined.

The release of people at the enterprises was approached with great tact and attention. Specific candidacies [for release] were discussed right in the primary labor collectives, then they were submitted to the enterprises' commissions for approval. There were instances when the trade union committee refused to reduce the workforce, returned documents for additional study or changed the candidates. The job placement bureaus aided in placing the workers.

/During the first year of the experiment, 11,491 persons were released on the Beolrussian Railroad (11,200 was the planned figure). Of these, 5,000 transfered to other enterprises and organizations of other sectors of the Belorussian

4,100 of them were let go in connection with retirement on a pension and 500 were transfered to railroad construction organizations./ The rest were utilized to fill certain vacant positions which opened during the course of the year (due to workers' return to school, going into the army or leaving on their own volution).

Results, Dissemination of the Experiment

The plan for releasing the contingent was carried out within the planned deadline, which permitted the introduction in 1985 of increased tariff rates (amounts by stages and insured the growth in labor productivity at rates which exceeded the growth in wages. Wages were raised in 3 stages, as the necessary funds were accumulated.

In the first stage (beginning 1 July 1985), workers were converted to the new tariff rates (amounts), in the second stage (beginning 1 Oct 1985), junior service personnel and white collar workers, and in the third stage (beginning 1 Dec 1985), engineering and technical personnel.

/The savings in capital which was obtained permitted the wages of the railroad's workers to be increased by 33.6 rubles, on the average./ Pay rates for workers in the leading professions grew significantly. So, a train dispatcher received an 80 ruble raise, an assistant station dispatcher, 70 rubles, a foreman, 50 rubles, and seinor engineers and engineers, 55 rubles.

In 1986 the Belorussian experiment had been disseminated to another 10 railroads (October, Baltic, Moscow, Lvov, Southern, Odessa, Moldavian, North Caucasus, Alma-Ata and Central Asian) and 2 subway systems (Minsk and Kharkov).

Working with a reduced contingent, the enterprises' collectives are successfully fulfilling all of the basic indicators. Let us present several of them:

Indicators for work during the 10 months of 1986 in comparison with the corresponding period of last year (percent)	Throughout the MPS	Including on the 11 railroads operating according to the Belorussian Railroad experiment
1. Labor productivity	108	112.4
2. Average wage (from the wage fund) for shipments	104.1	107.7
3. Contingent	96.4	92.1
4. Balance sheet profit (as percent of the plan)	109.5	118.7
5. Reduction in unauthorized work absences	41.5	47.4
6. Reduction in idle time	20.5	24.5

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EXPERIMENTAL NATURAL GAS-POWERED LOCOMOTIVE TESTING

Moscow VECHERNYAYA MOSKVA in Russian 2 Dec 86 p 2

[Article by M. Belostotskaya: "The Natural Gas-Powered Locomotive"]

[Text] A new locomotive design, in which natural gas is used as the fuel, is being developed by specialists at the All-Union Scientific Research Institute of Railroad Transport. The first locomotive prototype will undergo testing on the Institute's experimental ring at Shcherbinka.

This is what deputy director of the VNIIZhT V. Matyushin told our correspondent, "The experimental prototype was developed based on a typical switch engine. Not much has been added, containers for the compressed gas, a regulator and mechanisms which control gas distribution and fuel supply. Diesel fuel is still being used a little, but only as an igniter. The design is good in that negligable reworking of the series-produced machinery is needed. We were able to do it at our experimental plant under the supervision of scientists from the Institute's diesel locomotive department.

A large testing program has been planned. For example, we still have to determine the traction capabilities of a natural gas-powered locomotive, refine fuel consumption, adjust the gas equipment.

Conversion to compressed natural gas will permit us to conserve scarce diesel fuel. Another advantage of the new design is its ecological cleanliness. Therefore, switch engines will be converted to gas first of all at stations within the city limits of large cities, to cut down on environmental polution.

At the same time, at Shcherbinka, they are preparing for still another experiment -- with a mainline locomotive running on liquified natural gas. When cooled to a liquid state, the gas takes up less space, and this means that it gan go greater distances without having to take on fuel. A laboratory car has been designated for testing the cryogenic equipment, and a special pavillion is being outfitted for adjustments.

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PROPOSALS FOR REDUCING RAIL SHIPMENT COSTS

Moscow ZHELEZNODOROZHNYY TRANSPORT in Russian No 11, Nov 86 pp 54-58

[Article by Doctor of Economic Sciences A.P. Abramov and Candidate of Economic Sciences E.I. Khait: "Ways of Reducing Shipping Costs"]

[Text] The 27th CPSU Congress has adopted a policy of accelerating the socio-economic development of the country. It is necessary to transfer the national economy onto the rails of intensive development, fine-tune the operational economic mechanism and ensure the achievement of the highest world standards of labor productivity, product quality and production efficiency.

One of the most important indicators typifying production efficiency is the cost of the product (shipping). Rail transport is a capital-intensive sector and a major consumer of labor, fuel-and-power and other material resources. A 1-percent reduction in the cost of rail shipping will conserve almost 145 million rubles a year for the national economy.

Changes are continuously occurring in the composition of operating expenses and the cost of shipping. Thus, some of the industrial sidings are transferred into the balance sheet of rail-transport activity each year. In 1983 the expenses for conductors in passenger cars were excluded from the composition of operating expenses, while trips on service tickets were taken into account in shipping volume. In an analysis of shipping cost, these changes require a recalculation of the cost level under comparable conditions. Over the 11th Five-Year Plan overall, the cost of shipping in comparable terms rose by 5.3 percent, while over the last three years it has risen by 0.4 percent. It increased especially sharply in 1982--by 7.45 percent according to reporting and by 4.1 percent with a regard for comparable conditions. This is explained first and foremost by the fact that since January of 1982, new prices for rolling stock and fuel-and-power and other material resources were introduced along with increased standard deductions for social security etc.

This group of reasons made up about half of the overall increase in shipping cost in 1982. The rest of the cost increase was caused by a worsening of transport operations, which was reflected in the low rates of shipping volume growth, the considerable lag of the labor-productivity growth rates from the increase in average monthly wages, the accelerated growth of the cost of fixed production capital relative to the increase in shipping volumes, an increase

in the proportionate expenditures of fuel-and-power resources and a worsening in the utilization of rolling stock. Thus, in 1982 the total volume of shipping was 99 percent of the 1981 level and only 1.1 percent greater than the 1980 level, at the same time as the fixed productive capital amortized through shipping expenses increased by 8 percent over the two years. Labor productivity in 1982 was 99.2 percent of the 1980 level at the same time as the average monthly wage increased by 5.6 percent over the same period. Railcar turnaround slowed by 4.8 hours and locomotive productivity declined. For all of these reasons, shipping cost increased by 4.1 percent compared to 1981 and by 4.9 percent compared to 1980.

The turning point in rail operations came in 1983. Over the year the volume of shipping increased by almost 4 percent, labor productivity increased, rolling-stock utilization improved considerably and the proportionate consumption of fuel-and-power resources was reduced. All of this provided for a reduction in shipping cost. These positive trends existed in the fourth and fifth years of the 11th Five-Year Plan.

It is true that the cost of shipping increased by 0.4 percent in 1985, which was associated largely with the unfavorable weather conditions extant in the 1st quarter and the worsening of the most important indicators of rolling-stock utilization--turnaround and railcar productivity, line and sectional traffic speeds etc.--in this period. In subsequent quarters, the quality of the operations of rail transport improved--shipping volume increased, railcar productivity increased by 1.5 percent for the year overall, the dynamic load of a loaded railcar increased by 1.5 percent and gross train weights increased by 2.6 percent.

The plan for the first year of the 12th Five-Year Plan is being successfully fulfilled. In the first half of 1986, the freight-shipment and passenger-transport plans were overfulfilled and the most important qualitative indicators of operational activity were improved--railcar turnaround was accelerated and static loads and railcar productivity increased, as did train weights etc. All of this has had an effect on the economic indicators--labor productivity has increased and shipping cost has been reduced by more than 3 percent (compared to the plan).

Changes have occurred in the shipping cost structure in connection with the elimination of the passenger-car conductors from the complement of the operational contingent in 1983--the share of wages fell by roughly 1.4 percent and the share of other expenditures increased. Currently the share of wages with deductions for social security comprise about 40 percent of cost (39.1 percent), while 33.3 percent of costs go for fixed-capital amortization and and 14.4 percent for fuel-and-power resources. Thus, 86.8 percent of shipping cost goes for the indicated current expenses and 13.2 percent comprise expenses for materials and other costs. Although some of the shipping cost associated with wages is decreasing lately (see table), wages make up the largest share of it. Therefore, a decisive factor in reducing shipping cost per unit shipped is providing for rapid growth in labor productivity compared with the growth in average monthly wages.

Labor Productivity--The Decisive Factor

Labor productivity for employees occupied with shipping increased by 8.2 percent for the 11th Five-Year Plan overall, and by 9.2 percent in the last three years. For the first time, faster growth in labor productivity compared to the growth in wages was thereby ensured over the preceding seven years. Through this factor, shipping cost declined by 1.4 percent in 1985 compared to 1982.

Reductions in proportionate expenses for wages were achieved by all sectors of rail transport. In 1985, proportionate wages were also reduced compared to 1984. For sectors such as locomotives and railcars, however, they increased somewhat, chiefly for the contingent employed in the yard repair of railcars and the upkeep of locomotive crews. This is explained to a certain extent by the growth in the railcar fleet per unit of shipping associated with the decline in railcar turnaround and the increase of unplanned train expenses and supplementary overtime pay in 1985. Overtime pay for locomotive crews in 1985 increased by 10.2 percent for electric traction and 13.9 percent for diesel traction.

It can be seen from the table that in 1985 shipping cost was reduced for almost all cost elements compared to 1982. The increase of proportionate expenditures for electric power was caused basically by the expansion of the electric-traction grid and growth in its share of overall shipping volume. This increase in the portion of costs for electric power for train traction was compensated for by a reduction in fuel expenditures. Proportionate fuel expenditures for fuel-and-power resources for stationary power and other needs increased somewhat, associated chiefly with the expansion of the rail network, power grid, automated blocking and dispatcher signals, the mechanization and automation of sorting humps, the electrical centralization of signals etc.

The principal increase in cost was caused by growth in proportionate automation [as published] deductions, covering the reduction in proportionate expenses for other elements. Thus, proportionate amortization deductions increased by 7 percent in 1985 compared to 1982, which led to a shipping cost increase of 2.16 percent, while compared to 1984 they were 2.4 and 0.80 percent respectively.

The labor productivity of workers employed in shipping should increase by 10-12 percent in the 12th Five-Year Plan. If the ratio of labor-productivity growth and wages is maintained at 1:0.6 with all other factors remaining equal, shipping cost should be reduced by 1.55 percent in 1990. The workers of rail transport plan to reach the line of achieving an increase of 18-20 percent or more over the five-year plan. With the same ratio between labor-productivity growth and wages with all other factors remaining equal, this will permit a reduction in shipping cost of no less than 2.4-2.6 percent. In the first half of 1986, labor productivity increased by 8.9 percent with an increase in average monthly wages of 3 percent. This alone generated a shipping-cost reduction of 2.1 percent.

The problem of uncovering and utilizing all reserves for raising labor productivity remains exceedingly acute. The dissemination of the experience

of the Belorussian Railroad, whose collective achieved a considerable increase in labor productivity through the incorporation of the achievements of scientific and technical progress, the improvement of labor organization and the strengthening of material incentives, has great significance in resolving it.

Amortization and Associated Problems

The level and dynamics of shipping cost depend largely on the quality of utilization of fixed productive capital. Over the 11th Five-Year Plan, the fixed productive capital of rail transport increased by 22.3 percent in the face of an increase of 8.5 percent in shipping volume. As a result, the return on investment in ton-kilometers per ruble of fixed capital declined by 11.3 percent over the 11th Five-Year PLan.

Changes also occurred in the structure of fixed capital over these years--the share of rolling stock and computers increased, which led to an increase in the average level of amortization deductions. For these reasons, the amortization deductions as part of the cost of shipping increased steadily in 1985 and totaled 114.7 percent of the 1980 level. In 1983-1985, amortization deductions per unit of shipping increased by 6.9 percent (see table), which generated an increase in costs for the "amortization" element of 0.075 kopecks per 10 ton/kilometers compared to 1982.

About 35 percent of the fixed productive capital of rail transport is rolling stock--railcars and locomotives--while their share of the total amortization deductions is about 45 percent. In 1983-1985, a substantial improvement in the utilization of rolling stock was achieved--train weights over these years increased by 194 tons, railcar turnaround was accelerated by 7.7 hours, and the average daily productivity of railcars was up 9.3 percent and that of locomotives 2.2 percent. The working fleet of freight cars and operational locomotives per unit of shipping was correspondingly reduced. Thus, the working fleet of freight cars in 1985 totaled 98.2 percent of the freight-car fleet of 1982, notwithstanding the fact that the volume of shipping over these three years increased by 7.2 percent, while the operational locomotive fleet in freight traffic grew by 4.4 percent, i.e. to a considerably smaller extent than shipping volume. The size of trains and the sectional speeds of traffic increased in passenger traffic.

Over the last three years of the 11th Five-Year Plan overall, shipping cost was reduced somewhat through improvements in the utilization of rolling stock. The impact of the improved utilization of rolling stock was surpassed, however, by the growth in proportionate amortization deductions. Thus, they increased by 15.4 percent for diesel traction, 7.9 percent for electric traction and 10 percent for freight cars per unit of shipping in 1985 executed by the corresponding types of traction.

The total amortization deductions are directly associated not only with the working fleet of railcars and operational fleet of locomotives, but also with the replacement fleets, which today depends little on the quality of utilization of the rolling stock. A considerable portion of the railcar fleet is both physically and functionally obsolete. The operation of railcars

beyond their service lives raises expenses, while their frequent decoupling for repairs leads to a worsening of the utilization of other railcars and locomotives. Amortization deductions are determined herein by the existing standard for the cost of the whole fleet.

Spending element	Proportionate expenditures (under comparable conditions), kopecks per 10 applied ton-kilometers				Size of proportionate expenditures in 1985, %		
	1982	1983	1984	1985	1982	1983	1985
Wages with deductions for social security	1.4109	1.3765	1.3685	1.3631	96.6	99.0	99.6
Materials	0.2422	0.2445	0.2460	0.2373	97.9	97.0	96.5
Fuel	0.2443	0.2357	0.2345	0.2319	94.9	98.4	98.9
Including for locomotives	0.2128	0.2016	0.2031	0.1996	93.8	99.0	98.3
Electric power	0.2629	0.2628	0.2663	0.2705	102.9	102.9	101.6
Including for locomotives	0.2081	0.1935	0.2107	0.2137	102.7	110.5	101.6
Amortization	1.0866	1.0972	1.1340	1.1616	106.9	105.9	102.4
Other	0.2236	0.2203	0.2227	0.2216	99.1	100.6	99.5
Total	3.4705	3.4370	3.4720	3.4860	100.4	101.4	100.4

The prices for railcars, locomotives and other equipment supplied to rail transport are not always economically well-founded. For example, the price for a 2TE116 diesel locomotive is one and a half times greater than the price for a 2TE10M of the same capacity and productivity. The limit price, which is the basis for the establishment of the wholesale price, for the new 2TE121 diesel locomotive is 920,000 rubles, 2.1 times higher than the price for the 2TE10M diesel locomotive, while its capacity and productivity are only 30-35 percent greater. In a number of cases, the prices for imported rolling stock and track equipment are unjustifiably high, and the estimated cost of construction and installation operations is also too high. All of this raises the cost of the fixed productive capital of rail transport and, consequently, increases the total of amortization deductions, which is not covered by the efficiencies from the operation of the new equipment.

It is well known that prices for new equipment are established with a regard for the economic impact for the consumer. It is therefore essential to calculate more carefully the magnitude of this impact from the incorporation of the new equipment supplied to transport by industry. It is also important to achieve not only the economically well-founded establishment of prices for rolling stock, machinery, apparatus and equipment, but also a reduction in the projected cost of construction and installation work. In this regard, the All-Union Scientific Research Institute of Rail Transport [VNIIZhT] has developed and MPS [Ministry of Railways] has approved Methodological Instructions for Determining the Limit Prices for New Products Consumed by the

Rail-Transport Industry which envisage, along with a regard for the national-economic impact, a determination of the impact obtained by rail transport directly. In cases where the new products are efficient for the national economy, but their operation engenders additional costs for rail transport, it is proposed to establish, at the same time as the coordination of the limit and wholesale prices, a level of special tariff (collections) for the shipping (operations) carried out with the use of this equipment.

The correct disposition of new, more expensive and more productive equipment has great significance. This relates to rolling stock and permanent apparatus. Expenses for the amortization of fixed apparatus, as well as its maintenance and repair, depends little on the volume of shipping. The greater the shipping volume, the less the cited proportionate expenses. Consequently, the most advanced fixed apparatus should be placed on heavy-traffic lines, where the expenses associated with this apparatus are the smallest per unit of shipping, rather than on lines with a small volume of shipping operations. Furthermore, the incorporation of progressive but expensive fixed apparatus should be implemented taking into account that an increase in amortization deductions (where they exist) be covered by a reduction in expenses for repair and by the achieved economy from the improvement of qualitative indicators of rolling-stock utilization--an increase in traffic speeds, the mass and length of consists etc.

Fixed apparatus, taking up a considerable proportion of the increase in fixed productive capital, is planned, as a rule, for a prospective volume of operations. Thus, the parameters of new railroads and, consequently, the cost of their structures are determined for a volume of shipping in the tenth year of operation. The amortization deductions are included in the current costs completely, beginning with the first year of line operational start-up, when the volume of shipping has still not reached the planned magnitude. In this regard, the question of the expediency of determining the total of amortization deductions in the beginning period of operation of fixed apparatus taking the time factor into account should be considered.

The prices for imported rolling stock and other products are considerably higher than analogous domestic equipment, which is leading to unjustified growth in fixed productive capital, amortization deductions and shipping cost. It would be just in this regard that imported rolling stock and other equipment be transferred to the consumer--rail transport--balance sheet according to prices for analogous products produced in the USSR.

In a number of cases, the unfounded increase in expenses for amortization in the incorporation of new equipment is caused by a lack of correspondence of the service-life standards employed. The point is that many amortization standards are established as averages for aggregate groups of fixed capital. Equipment with varying service lives is in the same group. This situation frequently arises with regard to advanced equipment after the approval of amortization standards. In the calculation of amortization for this equipment, standards are employed that were established for existing equipment with the same purpose, but with different characteristics, including service life. Due to this, the enterprises are unwilling to incorporate several types of new equipment. For example, the volumetric hardening of rails increases

their cost by 25-30 percent, while the wear resistance of the rails is increased by 1.5 times. The amortization deductions of heat-strengthened rails, however, is arrived at in the same manner as that of conventional rails (5.5 percent). In this case, therefore, the incorporation of progressive and more efficient track upper elements increases amortization expenses and worsens the indicator of shipping cost due to the incorrect reflection of the efficiency of the cited equipment in the amortization deduction standards.

It is undoubtedly not possible or expedient to establish these standards for a broad range of fixed capital taking into account all forms, types, series and brands of equipment. Nonetheless, in our opinion, it is essential to introduce new standards for amortization deductions or to correct them in timely fashion for equipment whose improvement prolongs its service life compared to existing equipment.

Work on discovering and writing off in a timely manner physically worn-out and functionally obsolete equipment and the transfer of unnecessary or little-used fixed capital to other production levels or peripheral organizations in order to reduce the proportionate cost of amortization should be carried out more actively.

The execution of a whole set of operations for improving transport equipment is projected for the 12th Five-Year Plan: an increase in the reliability of rolling stock and fixed apparatus, the mechanization and automation of repair production and the incorporation of automated control systems for the locomotive fleet, the technological processes of sorting-yard operations and train traffic on sections and routes base on the more widespread application of computer technology. The execution of the measures projected will make it possible to free up a considerable body of workers in rail transport, raise labor productivity and improve the quality of rolling-stock utilization.

The Economy of Material Resources

Some 14.4 percent of operating expenses and shipping cost is comprised of the cost of fuel and electric power. The principal portion of the fuel-and-power resources consumed by rail transport goes for train traction. A reduction in proportionate fuel-and-power consumption for train traction was achieved in 1983-1985. An exception is the proportionate consumption of diesel fuel and electric power for passenger traffic. More than 2 billion kWh [kilowatt-hours] of electric power and about 350,000 tons of diesel fuel in standard units were conserved over 1983-1985 compared to 1982.

The main factors in reducing the proportionate consumption of fuel-and-power resources are increasing the average weight of the train and the static load of the railcar and improving the condition of the track and the rolling stock, ensuring a reduction in the number of train halts and delays. Unplanned delays of freight trains in 1985 were reduced by 19 percent versus the 1982 level, but compared to 1984 they increased by 9.4 percent, and moreover chiefly through the fault of three sectors: the traffic (30.8 percent), railcar (31.1 percent) and track (24.8 percent). Thus, the economy of fuel-and-power resources could have been considerably more than what was achieved.

The Fundamental Areas of Economic and Social Development of the USSR for 1986-1990 and for the Period to the Year 2000 emphasize that it is essential that the increase in fuel, power and raw-material requirements be 75-80-percent satisfied through their economy. A reduction in the proportionate consumption of fuel-and-power resources is projected in rail transport through the execution of major reconstructive measures: the improvement of the length of second tracks, the further electrification of railroads, the completion of the conversion of the freight-car fleet to roller bearings, the renewal of the locomotive fleet and its replenishment with more reliable and economical machinery. The improvement of qualitative indicators of rolling-stock utilization and, first and foremost, an increase in average train weight and the static and dynamic loading of railcars, as well as locomotive and railcar productivity indicators, will ensure the economy of fuel and electric power for train traction.

The projected modernization of the most important assemblies of the locomotives--the diesel and its cooling apparatus, the auxiliary-unit drives, the tractive electric motors and the ventilation systems--is aimed at reducing the proportionate consumption of fuel and power resources in the 12th Five-Year Plan. The equipping of diesel locomotives with automatic heating apparatus is envisaged. As a result of diesel-locomotive modernization, more than 1.8 million tons of diesel fuel in theoretical units and 80-90 million rubles of operating expenditures will be conserved over the five-year period.

The consumption of fuel-and-power resources per unit of shipping in stationary power increased in 1985. It is therefore essential to implement measures in the 12th Five-Year Plan for further reduction in the proportionate consumption of fuel-and-power resources for so-called other needs. It is necessary in particular to eliminate small and uneconomical boilers, incorporate devices for the drying of boxcars, modernize boilers for sand dryers, covert the electric-power supply of major rail junctions to higher voltage and expand the employment of automated equipment for the control of external lighting and economical illuminating instruments. It has been calculated that this will permit the conservation of about 2 billion kWh of electric power and the economy of 1.5 tons of standard fuel over the five year plan as well as reduce operating expenses in the last year of the five-year plan by more than 30 million rubles.

In the locomotive sector, a third of total expenditures go for materials, of which more than 40 percent are for current repair and maintenance of rolling stock. This portion of the costs increased by 7.1 percent for electric locomotives and 9.2 percent for diesel locomotives per unit of shipping in 1985 compared to 1982, which is explained to a certain extent by the reduction in repeat locomotive run time between repairs, a rise in technological discipline and the more complete fulfillment of repair-work volumes. As a result, a reduction in the yard percentage of defective locomotives was achieved (0.3 percent for electric locomotives and 0.7 percent for diesel locomotives in 1983, in 1984 0.1 and 0.7 percent respectively, and in 1985 0.25 percent for diesel locomotives). Notwithstanding this, the share of unplanned repair of the depot percentage of defective locomotives is still too great.

The railcar sector occupies the largest proportionate position in the total expenditures for materials (more than 40 percent), wherein about half of these expenses are for the depot repair of railcars and the rest is for their maintenance, current repair and the preparation of railcars for shipping. Expenses in this sector for materials in 1985 per unit shipment were reduced by 3.5 percent compared with 1982 and by 3.9 percent compared with 1984. But the proportionate consumption of materials for railcar depot repair increased, which was caused partially by an intensification of the operation of the railcar fleet and, to a considerable extent, the insufficient utilization of existing reserves.

In order to achieve an economy of material resources, it is essential to improve the technology of repair operation, expand the repeat use of materials and parts, and in particular to employ more widely methods of welding operations in the manufacture and repair of machinery, equipment, assemblies and parts, to incorporate lighter, stronger and cheaper materials and to employ various substitutes. The timely removal of physically and functionally obsolete designs of rolling stock, and especially railcars that require increased expenditures for repair, from the fleet also has great significance.

Planning and Economic Incentives

The improvement of economic methods of economic management have great significance in further reducing the cost of shipping and raising the efficiency of transport operations.

The role of shipping cost in evaluating the activity and stimulating the collectives of the railroads and their divisions has become stronger recently. On the Dnepr and Southwestern railroads, which were converted to the new economic management conditions in January of 1986, for every percentage point of reduction (increase) in shipping cost compared to the plan, the material-incentives fund is increased (decreased) by 2 percent. A reduction in cost will also be facilitated by the fact that in the event of the average growth rate of wages exceeding the growth in labor productivity, the corresponding part of the material-incentives fund is reserved or re-allocated to the fund for social and cultural functions and housing construction.

Improving the planning the operational expenses and shipping cost at all levels of management remains a most important problem. One cannot today be reconciled to the fact that planning is based principally on the level achieved or on individual standards that reflect the extant technical and economic conditions at a given specific enterprise. And insofar as the financial results of the enterprises and the economic-incentive funds depend on the degree of fulfillment of the plan, the enterprises turn out to have no vested interest in uncovering production reserves and including them in the plan.

In our opinion, the improvement of planning should be aimed at the further development of the norm-setting method and the incorporation of unified rather than individual standards that have been developed on the basis of progressive technology and technology with corrections that take into account only some factors that do not depend completely on the enterprises. Insofar as the

evaluation of the activity of enterprises and the system of economic stimulation will be made dependent on the degree of fulfillment of the progressive norms established, a vested interest of the enterprise collectives in the constant improvement of production equipment and technology will be created.

For an objective evaluation of the achievements of the enterprises, it is necessary to ensure correspondence between the indicators employed in planning, norm-setting, accounting and reporting. This correspondence is in most cases lacking today. For example, the standards for the consumption of materials in physical units for on-going types of locomotive repair are set by series overall for all types of repair, and planning for the consumption of materials is conducted for individual types of repairs with a regard for locomotive series.

In accordance with the existing range of products, expenses for locomotive repair are taken into account for the principal types of repairs, but not overall for each type of traction without delineation of the series of locomotive and the nature of its operations, which makes the analysis and discovery of reserves for a reduction in expenditures more difficult. Thus, the norms established by MPS for the consumption of materials per unit of run time for all types of repairs in a group does not correspond to the practice of planning costs in monetary form.

The introduction of accounting for expenses for individual elements for locomotive repair according to series and type of operation and types of railcars will permit the combination of enterprises in homogeneous groups, the establishment of optimal programs and corresponding technical tooling for them and the development of progressive norms of labor- and materials-intensiveness for the work they carry out. It is also expedient to improve the accounting and reporting of expenses common to all sectors of railroads. Thus, the expenses associated with equipment operation (Art. 254 of the Range of Expenses) and their amortization (some of the expenses according to Art. 250) depend directly on the program of repairs for locomotives, railcars and other machinery and equipment. The share of the indicated expenses relative to the sum of the basic costs for repair exceeds 40 percent. It is understandable that in determining the effectiveness of the incorporation of new machinery and equipment in repairs, aside from basic expenses, the basic common expenses should also be taken into account. In the sectors, moreover, reporting according to the articles for basic general expenses was abolished in 1970. The restoration of this type of reporting would permit a more well-founded determination of the effectiveness of the technical and organizational measures incorporated at the enterprises.

All of these measures will facilitate the resolution of the tasks posed by the 27th CPSU Congress on strengthening the rule of economy, which is one of the most important factors in the intensification of production.

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EFFICIENCY OF INCREASING RAILCAR AXLE LOAD

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[Article by Candidate of Technical Sciences Ye.N. Vavilov, Candidate of Technical Sciences V.A. Kozyrev, Candidate of Economic Sciences A.M. Pavlov and engineer F.V. Snitkovskiy: "The Efficiency of Raising Railcar Axle Loads"]

[Text] An increase in the traffic and carrying capacities of railroads, as well as an increase in the level of utilization of fixed technical assets, including railcars, has great significance for the successful fulfillment of the ever-growing volume of shipments. One of the most important tasks therein, along with an acceleration of railcar turnaround, is increasing the static load both through the complete utilization of the carrying and volumetric capacities of railcars and through the transition to the production of railcars with increased axle loads.

The intensification of the shipping process and the fulfillment of considerable volumes of shipping require an acceleration of the development and incorporation of new equipment and an increase in the trustworthiness of its economic valuation.

It is well known that in the process of scientific research associated with the creation of new freight cars and their planning, the manufacture and finishing of experimental prototypes and series production, the estimated technical and economic efficiency and estimated impact are determined. As experience demonstrates, however, the actual level of efficiency of the incorporation of new equipment and, in particular, freight cars in many cases does not coincide with the estimated (planned) evaluation. This is explained by an underestimation of the necessity of design revisions in the creation of new equipment and the multitude of operating conditions and their interconnections and effect on the estimated indicators, as well as the limited nature of the initial information and the use of standard and reference data of a generalized nature that does not take into account the specific design features of the new equipment etc.

In order to raise the reliability of the solutions adopted for the development of the railcar fleet, it is essential to improve the methods of determining the estimated (planned) and actually obtained efficiency of new-design freight cars, and in particular railcars with increased axle loads. The results of

calculations of the actual economic impact should be used as the ultimate indicators of the progressive nature and efficiency of the selected versions of the new equipment.

The allowable axle loads of 20.5-21.0-ton railcars were established in 1955. The execution of a whole set of measures for strengthening the railcar fleet in 1976 made it possible to increase the axle loads of freight cars constructed after 1974 to 22.0 tons and later to bring them 23.25 tons. The freight capacity of the cars correspondingly increased by 6-7 tons. In this regard, in order to answer the question of the expediency of the measures conducted, it is necessary to determine the actual efficiency from the increase in railcar axle loads.

The execution of these calculations, however, requires the further improvement of methods for determining the actual economic impact from the incorporation of increased-capacity railcars, because in existing standard techniques there are practically no recommendations for the calculation of the actual impact. All of the recommendations consist just of a requirement to use the actual indicators in the calculations in place of the planned ones. The remaining technique for calculating the actual economic impact is not distinguished from the determination of the estimated economic impact, and moreover in both cases the economic impact is recommended to be determined according to the indicators for the accounting year, the concept of which in existing techniques is not quite synonymous. Furthermore, the economic impact is determined for an annual output of railcars, which can fluctuate within a range of 5-10 times, as can the size of the estimated impact.

Research conducted at the Moscow Institute of Railroad Engineers has shown that the elaboration of the actual economic impact should be carried out with a regard for the actual size of the series run of new equipment, the period and gradual nature of its output, the forecast of the dynamics of the technical and economic indicators over the service life of the new equipment and the random nature of a number of operational indicators. Proceeding from this, the actual economic impact from the production and operation of railcars with increased axle loading calculated for the output of railcars of a given series is recommended to be determined according to the following formula:

$$\Delta Э = \sum_{Y=0}^{Y=t_{вып}} \left[\sum_{t=Y}^{t=T_{сл}+Y} (Э'_t - Э''_t)\,\eta_t + (K'_t - K''_t)\,\eta_t \right] A_Y, \qquad (1)$$

where

$t_{вып}$ -- is the duration of the output of railcars of the given series;

$T_{сл}+Y$ -- is the duration of the life cycle of the railcars of the given series, in years;

$T_{сл}$ -- is the service life of the railcars, in years;

$Э'_t$, $Э''_t$ -- are the annual operating expenses of the rail transport for the shipment of freight in the t-th year, carried out by the base and new railcars, calculated by annual productivity of the new railcar (with increased axle load), in thousands of rubles per year;

η_t -- is the coefficient for the calculation of equivalent expenditures;

K'_t, K''_t -- are the capital investments in the railcar fleet and the attendant sectors essential for ensuring standard railcar operation, in the t-th year respectively for the base and new railcars calculated for the annual productivity of the new railcar, in thousands of rubles;

A_Y -- is the annual output of the new series in the Y-th year of the period of railcar output.

A change in the axle load of railcars has an effect on the operating expenses and capital investment of rail transport. Operating expenses are determined by the method of expense scales with a regard for the dynamics of operating indicators by year in accordance with report data and forecasts. In determining the economic impact from raising the axle loads of railcars, it is essential to take into account first and foremost the operating expenses associated with the shipment of freight using new- and base-design railcars and loading and unloading apparatus, including the fastening of freight and its packing, the preparation of railcars for shipping, their weighing, the upkeep of sidings and warehouses, the compensation for freight losses in shipping etc. It is also essential to keep in mind the capital investment aimed at developing the locomotive fleet, the mechanization equipment for loading and unloading operations, the weighing facilities and the warehouses, the apparatus for preparing railcars for shipping, their repair, strengthening the upper part of track and artificial structures, the bringing of railroad structures to the assigned dimensions etc.

The calculation of the actual impact of railcars from raising the axle load from 21.5 to 22.8 and 23.25 tons was carried carried out based on the example of a model 11-27 boxcar and a 12-1000 flatcar. The technical indicators of these railcars are presented in Table 1.

Table 1

Technical feature	Model 12-1000 flatcar	Model 11-27 boxcar
Axle load, tons	22.8 / 23.25	21.5 / 23.25
Freight capacity, tons	68.9 / 70.7	61.3 / 68.3
Empty weight, tons	22.3	24.7
Length along coupling axes, mm	13,920	14,730
Internal body length, mm	12,076	13,800
Body volume, cubic meters	73	120
Car service life, years	28	41

In calculating the operating expenses and capital investment by years for the estimate period, a forecast of the principal operating indicators of railcar utilization made by the All-Union Scientific Research Institute of Rail Transport [VNIIZhT] was taken into account, while actual indicators were used for the period since 1978.

In order to increase the precision of the calculations, it is essential to take into account correctly the actual static load on the railcar with various patterns of freight traffic and the growth in the expenditures for repairs associated with the axle loads. The data on the actual utilization of the freight capacity of the railcars were obtained as a result of test weighings. In establishing the actual static load on the railcar for bulk freight, the numerical characteristics for the distribution of this indicator were calculated. In calculating the actual impact, the average values of the static loads were used, since its distribution was standard, while the magnitude of the coefficient of variation was insignificant. An evaluation of the effect of raising the freight capacity of boxcars and flatcars on their technical condition under operating conditions was conducted according to network data from 1973-1984.

On the basis of a summarization of network-wide data, statistical correlations of the frequency of decouplings of boxcars and flatcars for current repairs to the average value of the static loads and the railcar turnover times were obtained. There is quite a close link between these two values. The coefficient of multiple correlations testifies to this, equal to 0.875 and 0.797 respectively. It was also established that changes in the frequency of decouplings of flatcars for current repairs depend 77 percent and boxcars depend 64 percent on the factors under consideration, while for 23 and 36 percent respectively the changes were determined by random factors not taken into account.

The magnitude of the expenditures for yard repairs of railcars with increased axle loads and roughly equal levels of reliability for the base railcar can be evaluated according to the statistical data on the cost of substitute and rehabilitated assemblies in repairs with subsequent correction for the magnitude of the static load. Part of the repair expenditures, going for dismantling and assembly work, remain identical for the railcar designs under consideration. Analysis of the expenditures for yard repairs of flatcars at 18 depots with the flow method of repairs indicated that expenses for dismantling and assembly operations were of a stable nature and were 7-10 percent of the total repair expenditures on average for flatcars. Thus, the expenditures for the depot repair of cars with increased axle loads can be defined as the sum of the expenditures for the repair of the base prototype going for dismantling and assembly work and the replacement and rehabilitation of assemblies multiplied by the quotient from the division of the average static load of cars of the new and base designs.

In the future, raising the intensiveness of the operation of the railcar fleet, with all other factors being equal, will lead to an increase in the cost of repairs. In the first approximation it can be taken that an increase in railcar repair costs is proportional to the intensiveness of their operation and is taken into account by the coefficient ρ_t, determined as the

quotient of the division of the average annual railcar productivity in the t-m and first (t0 = 1) years of the estimate period respectively. Then the expenditures for the depot repair of flatcars and boxcars with increased axle loads in the year t-m of the estimate period are determined according to the following formulas:

$$(2) \qquad C^{пв}_{д.р} = 20{,}5 + 268{,}0 \frac{P^{н}_{ст.пв}}{P^{б}_{ст.пв}} \rho^{пв}_{t};$$

$$(3) \qquad C^{кр}_{д.р} = 12{,}0 + 225{,}8 \frac{P^{н}_{ст.кр}}{P^{б}_{ст.кр}} \rho^{кр}_{t}.$$

The calculation of static and dynamic loads on the railcar were conducted using form Ts0-29 and the forecasts of VNIIZhT on shipment volume, freight patterns, average shipping distance and average static loads and freight capacity of railcars. The calculation of the transition from the static load of the base model railcars to the static loads of comparables were accomplished with a regard for the differences in their freight capacity, useful volume and internal length. The static loads of the base and new railcars were therein subject to correction taking into account the actual freight capacity and its utilization according to form Ts0-29.

Table 2 presents the results of calculations of the static and dynamic loads Pst and Pd, loaded run Rl, the measurable portion of operating expenses E and capital investments K of railroads per 1,000 net ton-kilometers. The indicators have been calculated by years proceeding from the current pattern of freight traffic and its forecast for the future. These indicators are calculated both for a complete pattern of freight traffic and for a reduced number of types of freight. The actual economic impact through raising the axle load of a flatcar to 23.25 tons, calculated taking into account its life cycle and the forecast of shipping to the year 2000 and calculated per individual flatcar, is 224.6 rubles.

Table 2

(1) Год	(2) Полувагон	(3) Показатели									
		(4) для 23 наименований грузов					(5) для 8 наименований грузов				
		$P_{ст}$, т (6)	$P_{д}$, т (7)	$R_{гр}$, км (8)	Э, коп. (9)	К, руб. (10)	$P_{ст}$, т (6)	$P_{д}$, т (7)	$R_{гр}$, км (8)	Э, коп. (9)	К, руб. (10)
1978	Базовый (11)	62,34	59,67	893,59	100,75	2,44	70,18	70,17	758,23	91,86	2,15
	Новый (12)	62,69	59,97	894,71	100,48	2,43	70,89	70,82	758,85	91,30	2,13
1980	Базовый (11)	63,69	60,51	905,56	99,32	2,38	68,97	68,95	751,51	93,68	2,18
	Новый (12)	65,19	61,68	910,26	98,00	2,34	71,95	71,91	751,65	91,13	2,09
1985	Базовый (11)	64,50	61,21	886,04	106,26	2,33	70,44	70,52	747,24	98,24	2,096
	Новый (12)	64,83	61,45	887,20	106,32	2,328	71,06	71,07	747,00	97,82	5,084
1990	Базовый (11)	64,30	60,89	891,75	105,61	2,30	70,40	70,49	750,62	97,39	2,06
	Новый (12)	64,64	61,13	893,01	105,37	2,29	71,04	71,05	751,46	96,90	2,05
2000	Базовый (11)	64,26	61,10	901,74	103,87	2,22	70,39	70,49	766,68	95,88	2,00
	Новый (12)	64,61	61,35	902,98	103,67	2,23	71,04	71,07	767,56	95,49	1,99

[Key on following page]

Key: 1--Year; 2--flatcar; 3--indicators; 4--for 23 types of freight; 5--for 8 types of freight; 6--R_s, tons; 7--R_d, tons; 8--R_l, tons; 9--E, kopecks; 10--K, rubles; 11--base; 12--new.

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